The financial implications of building design

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THE FINANCIAL IMPLICATIONS OF BUILDING DESIGN

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THE FINANCIAL IMPLICATIONS OF BUILDING DESIGN

SUMMARY

This thesis is concerned with the influence of design on the value of office buildings.

The thesis suggests that it is possible to quantify the extent to which tenants of office buildings in Great Britain are dissatisfied with design, that different sectors of the office market have different design requirements and poor design can be identified as one reason why older buildings generally have a lower value than newer buildings. The thesis also suggests that a more appropriate method of appraising the value of office buildings is needed which takes into account the influence of design.

The early chapters of the thesis examine the relationship of the economy to the property market and the rationale for property investment. Following the literature review, the thesis explains how more than 200 office tenants across Great Britain were interviewed and the results analysed in relation to aspects of building design. Three buildings were also examined in greater detail and compared to the survey results.

The final part of the thesis puts forward a new method for appraising office investments which could also eventually replace current property valuation methods. The Property Investment Design Appraisal Model takes into account the cyclical nature of the property market, the growth of the underlying land value of any property investment and the influence of design on the capital value of office property. In the thesis the PIDAM is applied to specific situations to demonstrate how it can improve decisions by property investment portfolio fund managers.

A P J McIntosh June 1990

THE FINANCIAL IMPLICATIONS OF BUILDING DESIGN

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THE INTRODUCTION

The Purpose, Limits and Scope of the Thesis

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THE INTRODUCTION - The Purpose, Limits and Scope of the Thesis

1.0

Since the 1950's there has been a tremendous growth in the service sector of the economy. This has been at the expense of the manufacturing sector. Along with this growth has come the rise of office employment both in total numbers and in the square feet of office accommodation per employee. The result has been a steady increase in the requirement for office accommodation. This thesis is primarily concerned with office building design.

There are a number of difficulties in providing office accommodation. The quantity of land in any one particular location is finite which may cause restrictions on development. This may be further exacerbated by the restricted planning policies of local planning authorities. There have been occasions in the last 30 years when the Central Government has also restricted office development such as during the 1960's when the famous "George Brown Ban" restricted office development in the South East of England.

1.1 Accelerator Theory

The property market displays the characteristics which can be explained by the accelerator theory of economics. If demand (consumption) for office space increases by say 10% in one particular year this may result in the production of office space accelerating by 100%. The following year a fall in demand (consumption) may result in stagnant production. As a result the office production market tends to swing from excess demand to excess supply although exact measurements of this demand and supply volatility have so far been very difficult to measure due to the diverse nature of the market. The property market is imperfect in that there is not the level of knowledge to make such measurement possible.

The office market has therefore gone through a number of cycles due to the above factors. During the late 1960s and early 1970s there was tremendous growth of office demand and office development which came to an abrupt halt with the world recession of 1974 following the increase in oil prices. The tenant demand in the office market increased again throughout the late 1970s but again came to a halt in the world recession of the early 1980s when again oil prices were increased. It is this cyclical nature of the office market which makes it difficult for producers, investors and tenant to predict the office market with any great degree of certainty.

1.2 Components of Property Price

The price of property as previously explained, including office property, is made up of two components; the land value and the building cost. Over time building costs tend to rise due to inflation in the building construction industry. However, at the same time, the fabric depreciates and should, in theory be written off slowly year by year. In addition, the type of building may suffer obsolescence as it becomes out of date. This thesis returns to these concepts later.

The land value element changes year by year. For instance between 1985 and 1987 rents in the City of London rose from £30 to £60 per square feet. During this time there was only modest increases in building costs; in other words the increase was largely taken up by an increase in land value. It is the land value which is the volatile element and may even become a negative value as happened in the Midlands during the late 1970s, when empty office buildings were for sale at less than the cost of constructing new buildings.

The office market therefore displays the characteristics of being volatile due to the level of imperfect knowledge.

1.3 The Ideal Property Market

For a market to exhibit the characteristics of perfect competition there must be large numbers of both producers and consumers, free entry and exit to and from the market, the market must be driven by the motive to maximise profits, there are no economics or diseconomies of scales, there are an infinite variety of products on the market. But there must also be a perfect level of knowledge. Only the Stock Exchange approaches this rigourous set of criterion.

1.4 The Purpose

The purpose of this thesis is to examine, using a structure of pieces of research, the office property market in the United Kingdom and see how design influences the behaviour of that market. As explained above the market is far from perfect and one of the major limitations of any research in the property market is obtaining data which is both reliable and will produce results which can be analysed in a meaningful way.

1.5 The Limitations

Due to the limitations of the secretive nature of the market plus the time and financial resources of the author, the scope of the thesis is necessarily limited to producing statistical data of a limited nature which can be blended and analysed in conjunction with other data which exists. Even this exogenous data is very limited in both its extent and reliability. Despite the longevity of the property market, much of the data on the office market which may be helpful to this thesis is less than 15 years old.

Chapter 2

PROPERTY AND THE WORLD ECONOMY

Chapter 2

PROPERTY AND THE ECONOMY

2.0 World Trends

There are a number of world events which are influencing changes in the British Economy and the property market is continually responding to these trends. The purpose of this chapter is to relate national and international events to changes in the property market in the UK. This chapter provides a background to the property market and building design which will be referred to in Chapters 10 and 11 especially in The Discussion of Results and will be a critical factor in the Property Investment Design Appraisal Model put forward in Chapter 12.

Oil prices have had a more dramatic effect than any other commodity price over the recent decade. The increase in oil prices in 1973 and again in 1980 had very dramatic effects on the output of the countries involved with the Organisation for Economic Co-Operation and Development (OECD). Industrial production dropped significantly during 1980 and continued to fall to a low point in the final quarter of 1982. Since the beginning of 1983 production has slowly increased although the total output of the OECD countries during 1986 increased slower than during the earlier period of this growth.

Perhaps what is also relevant is that retail consumer prices (inflation) have also shown a common pattern throughout the OECD. The increase in oil prices in 1980 helped push up inflation to an average of more than 12% throughout the OECD in the first half of

1980 since when it has been steadily falling. It fell very dramatically in the early part of 1986 when oil prices fell from $28 a barrel down to below $10 a barrel in a matter of months. More recently retail consumer prices (inflation) in all OECD countries have either ceased falling or in some cases started to increase once more.

2.1 Trends in Great Britain

It is not surprising, with this background to world events, that the British Economy has also changed over this time period. Within Great Britain these events have been even more marked than in other OECD countries. When oil prices trebled at the end of 1973, inflation increased from 7% to 22% over a period of 24 months.

Although it fell to around 10% in 1979 it increased dramatically in 1980 to 20% again when oil prices doubled to 30 US dollars per barrel although oil prices were not the only cause of this jump in inflation. Oil prices fell for four years from a peak in 1982 and during this period UK inflation also fell to a low point of 2.5% in 1986. In recent years oil prices have been far less influential on the world economy.

During the 1970s there were a number of years when real interest rates (ie: monetary interest rates less inflation) were negative. This was not unique to Great Britain although the extent of the figure was greater than for many other OECD countries. In this period real assets, including many property investments, produced returns which were better than the low or negative returns experienced by other investments such as government stocks (gilts) or ordinary shares (equities). This is demonstrated by the figures produced by Wyatt, the consulting actuaries for the median Pooled Property Fund when compared with the FT equities index and FT 15 year stock index.

Table 2.1

Annual Time-Weighted Rates of Return (%pa) and Index Numbers

Year Ending 31st Dec	FT Actuaries All Share		FT Actuaries Over 15 year Stock **		Wyatt Median Property Pooled Pension Fund *	
	%	Index	%	Index	%	Index
1967	-	100.0	-	100.0	-	100.0
1968	48.4	148.4	(4.4)	95.6	6.4	106.4
1969	(12.0)	130.6	1.3	96.8	9.1	116.1
1970	(3.6)	125.9	2.3	99.1	7.4	124.7
1971	47.3	185.4	35.0	134.7	7.5	134.0
1972	16.4	215.8	(9.8)	120.6	20.1	161.0
1973	(28.5)	154.3	(2.4)	105.7	22.1	196.5
1974	(51.5)	74.85	(22.7)	81.7	(17.5)	162.1
1975	151.3	188.1	39.0	113.5	10.2	178.7
1976	2.2	192.2	13.3	128.7	10.0	196.5
1977	49.1	286.6	50.2	193.2	24.2	244.1
1978	8.5	310.9	(2.6)	188.2	20.1	293.2
1979	10.5	343.6	4.7	197.1	22.9	360.3
1980	35.4	465.3	21.3	239.0	17.8	424.5
1981	13.6	528.6	1.6	242.9	13.9	483.4
1982	29.4	683.9	54.1	374.2	9.1	527.4
1983	28.9	881.6	16.4	435.6	8.4	571.7
1984	32.0	1163.8	7.2	467.0	8.9	622.6
1985	20.7	1404.7	11.3	519.7	8.5	675.6
1986	21.3	1703.9	0.2	520.9	8.6	733.7
1987	4.2	1774.7	6.9	556.9	15.7	848.9
1988	6.5	1889.7	9.4	609.2	29.7	1100.6

Note:

** FT Actuaries 20 year stock index used prior to 1976
* Produced by the Wyatt Company (UK) Ltd

From 1982 the financial market changed. Interest rates became positive with real returns of more than 5% being experienced in several years. During this period until 1987 many property investments performed badly as they were unable to meet this more demanding target. The equity market produced returns of 20% or more in a number of years whilst the demand for industrial and office property was falling. Thus the combined effect of attractive investment returns in the Stock Market and poor demand for property resulted in property investment yields increasing and lack lustre performance from many investment portfolios.

For more than a decade the working population has been steadily increasing with the exception of a period between 1980 and 1983. However it is noticeable that, although the employed labour force fell very dramatically between 1979 and 1982, since that date, in line with the increase in world production, employment in Great Britain steadily increased until 1989. The problem is that employed labour has still not caught up with the size of the working population, hence unemployment.

Partly as a result of the hike in oil prices and the downturn in production in the 1980-82 period, employment in Great Britain rose very significantly. During 1987 unemployment started to fall from its peak in 1986. The dilemma is that the level of job vacancies still falls considerably short of the number of unemployed.

For the property market and the office market especially the significant trend relates to the structural changes which have taken place in the British Economy. Government statistics show the steady decline of manufacturing employment in Great Britain particularly after 1979 although there is evidence that, in the last 3 years this decline in manufacturing employment has levelled off. Non-manufacturing employment also declined in the period between

1979 and 1983. However this is now steadily increasing. In fact it has returned to the pattern of increase which was witnessed throughout the 1970's.

There are three long-term factors which need to be taken into account in understanding the structural changes taking place in the British Economy which inevitably relate to the quality of building design.

The first relates to the growing level of affluence. Although there there have been years when the growth in spending has been low, in fact below the rate of inflation such as between 1979 and 1982, long term spending continues to rise at between 2 and 5% faster than inflation. Part of this affluence is moving into the growing owner occupied residential market but much of it goes into retail expenditure. It also means that Great Britain, as a nation, demands higher quality buildings; at home, when we go shopping and importantly at our place of work, including office buildings.

The second factor which is equally important is the growing mobility of the population. The number of cars on Great Britain's roads is increasing at between 2% and 3% every year. This is in common with many OECD countries although some countries such as Japan have seen far more dramatic increases in car ownership. But looking at Great Britain alone this increase means that over the 30 years between 1970 and the year 2000 the number of cars on Great Britain's roads will have increased by 100%. All industrial and business property development has to take this factor into account in both its location and design.

The growth in air travel is even more dramatic and has recently been rising at around 5% per year. Mobility is changing our concepts as more people travel overseas on business or for holiday. But it is also changing the nature of the industrial business and office property market as an increasing number of firms want to be located within easy access of an international airport and hence an international market. Standards of office design are increasingly international.

The third factor which is influencing all our lives is the increasing amount of leisure time. For many people a working week of more than 40 hours is a thing of the past, flexi-time is part of the work experience and most people now enjoy at least 4 weeks holiday per year. With more leisure time employees have the opportunity to enjoy the environment within which they live. There appears to be a preference to live in certain parts of the country rather than others hence making modern British industry highly location conscious. A number of surveys have found that the locations they choose is where the workforce would prefer to live and enjoy its leisure hours. The southern half of Great Britain is generally preferred to the north but the influence of this overall trend is that employers and employees look to an increasingly high standard of building design for that period of their lives when they are at work.

2.2 Employment Trends

As the table shows the numbers employed in all industries in Great Britain increased by 3.7% between 1971 and 1980. However that level of employment decreased between the period 1980 and 1988 by 4.5%.

EMPLOYMENT TRENDS : Million Persons

Great Britain : Million Persons

	1971	1980	1988	1971-1980	1980-1988
All Industry	21.6	22.4	21.4	+3.7%	-4.5%
Manufacturing Industry	7.9	6.8	5.0	-14.0%	-36.0%
Service Industry	11.3	13.4	14.5	+18.6%	+8.2%

Source : Employment Gazette, HMSO

SELF EMPLOYED : Thousand Persons

1971	1980	1988	% Change 1971-80	1980-88
1,952.8	1,950.2	2,835.0	-0.13%	45.4%

Source : Employment Gazette, HMSO

For the changes which are now taking place in the property market, the relevant factor is the nature of employment. Manufacturing industries shed 14% of their employment between 1971 and 1980 but during the last 8 years the employment decline has been much faster at 36%.

The converse has happened with service industries. During the 1970s service industries were increasing at a very rapid rate. In the years from 1971 to 1980 employment in this sector of the economy increased by 18.6%. What is significant is the employment in this sector, whilst it has continued to increase, in the period between 1980 and 1988 it increased much slower than during the previous decade at only 8.2%. The increase of 1.1 million employed in the service sector does not replace the 1.8 million jobs lost in the manufacturing sector since 1980.

The other trend which is important, for the property market, is the growth of small businesses. Whilst the government does not keep any accurate statistics on the growth of small companies, from taxation returns they do know that the number of self-employed persons within Great Britain has been changing. Whilst in the years between 1971 and 1980 the number of self-employed decreased very slightly, since that date the number of self-employed have increased by a dramatic 45.4%.

The factor which is also relevant is the continual drift south of the population with the East Midlands, East Anglia, South East England and South West England continuing to show population increases, a factor which is once again reflected in the industrial, business and office property market. Not only is the office market changing but it is clear that there are submarkets within the overall market; each market would appear to have its own requirements including that of building design.

2.3 The UK Property Market

Over the last 20 years, the UK Property Investment Market in the United Kingdom has reputedly become the most sophisticated in the world. It did not develop in this way by design. No government introduced legislation with the specific aim of encouraging the type of property market which exists today. The Property Market evolved due to a number of influences and in response to a number of situations. Inflation, national economic policies, world trends, entrepreneurial skill, the poor performance of gilts and equities during the 1970s, town planning and taxation have all contributed in different ways to the growth of the present property investment market.

To state that the market developed in response to the high inflation in the 1970s is an insufficient explanation. All western countries based on a market economy experienced inflation to a greater or lesser extent over this period. Alternatively, to state that it was the growth of investing institutions as financial intermediaries which caused the property market to develop is also an inadequate explanation. All OECD countries have experienced growth in pension systems and many have used the funded pension scheme as a way to meet this objective. Whilst France and Germany developed a pay-as-you-go pension system the United States of America in particular developed a funded pension system although it did not develop the type of property investment market common in Great Britain.

2.4 The Evolution of the UK Property Market

Fixed interest investments, such as government securities and mortgages, were in the past the traditional media through which life insurance companies would invest. The investment risk was relatively low and the return on investments, although not specifically high, was relatively secure.

Mortgages were granted for a period of between 10 and 40 years on a fixed interest basis. Throughout the life of the mortgage the interest rate and periodic repayments remained unchanged. In times of inflation the problem of this system was that the mortgagee received none of the increase in capital and/or rental value of the property which changed during the term of the mortgage.

Initially, to overcome this problem, institutions granted mortgages on variable rates of interest to developers; the interest payable was adjusted periodically and became related to the rental value of the property. However, institutions soon realised that they would have more control over their investment expenditure if, instead of granting a mortgagee a loan based on the collateral value of the property, they purchased the investment and granted a leaseback to the developer.

By the late 1960's the "sale and leaseback" method of funding property development had become common practise. The developer guaranteed to pay a leaseback rent to the institution depending on the nature of the +nvestment. Initially, leaseback rent was based on fixed interest rates. However, as the rental income increased, the developers share of this rent increased over time. In other words, the institutions were often in no better position than if they had granted a fixed interest mortgage themselves even though they owned the freehold or long-leasehold interest of the building.

Institutional finance became popular with developers because it was outside the government monetary qualitative controls during this period. For occupiers, it was an attractive way to raise finance to meet liquidity requirements to meet debts or for further expansion.

Various amendments to this simple "sale and leaseback" method to developers were therefore used. Sometimes the increase in rental value, over and above the initial rents when the building was first constructed, was shared in agreed proportions between the developer and the institution. Later, institutions insisted on receiving a fixed percentage, say 80%, of the property's rental income. It should be remembered that the developer was technically the headlessee who underlet the building to an occupying tenant.

Although the change from mortgage interest arrangements to institutions owning an equity interest in the property enabled the institution to benefit from inflation in the value of rents over time, the security of income was suspect. If the developer went into liquidation or no tenant was found for the building, an institution could find that it had invested many millions of pounds in a property which was producing little, if any, return. These problems reached a peak in 1974 at the time of the property market crash.

The property boom and its subsequent collapse encapsulated the principle influences which made financial institutions into the dominant landlords they are today. The boom was partly created by the high level of demand relative to a "fixed" supply, for property during the late 1960's and also the relaxation of monetary supply and development controls in the early 1970's as the new government made a "dash for growth" before the UK became a full member of the European Economic Community. In those inflationary times, property seemed a very good investment medium and in many ways looked a better "bet" than fixed interest stocks or company equities.

It was at this time that the "institutional lease" became more sophisticated and the modern five year rent review pattern became widely accepted by the property market. At the same time, the system of Office Development Permits (ODP) and Industrial Development Certificates (IDC) existed in South East England. The famous George Brown Ban on office development in Central London in 1964 was an example of this restriction on development. Developers therefore sometimes commenced development programmes outside South East England. Towns such as Birmingham, Bristol, Derby, Leicester, Manchester, Nottingham, Portsmouth and Southampton all witnessed office construction booms. Even in the early 1980's, 10 years after much of this construction, many of the buildings constructed during this boom period remained unlet. Institutions and banks provided the sale and leaseback finance to the property company but the finance was provided on the assumption that rental values would continue to rise and the speculatively built buildings would readily let when completed.

During 1973, a series of events caused the market to collapse. In an effort to control the economy and to prevent a balance of payments crisis, the Bank of England minimum lending rate increased from 4.5% in early 1972 to 13% by the end of 1973. Such a tight monetary policy was at the expense of property companies although investing institutions were far less vulnerable.

As a result of inflation, building costs also rose dramatically. Together with the cost of short-term finance, the total cost of new buildings increased dramatically faster than rents. But at the same time the level of demand for buildings under construction fell very dramatically. The oil crisis in early 1974 caused crude oil prices to rise by 300%. But monetary policy had also dampened economic activity reducing the overall demand for property in the UK economy.

It was two pieces of government legislation which finally caused the collapse. A "rent freeze" was introduced as a way of controlling prices and acting under political pressure to tax property companies, Development Gains Tax, legislation was also introduced in December 1973 but by this time, property values in general were already falling. This legislation was more like shutting the stable door after the horse had bolted and in the event, the legislation caused the stable to collapse! The loss of confidence was so dramatic that the Bank of England launched its so called "lifeboat" operations to save the banks suffering as a result of property companies going into liquidation.

It was the institutions who became even more involved in property as a result of those dramatic events. During the boom period, many institutions purchased investment properties for the first time in an attempt not to miss out on what appeared to be a lucrative medium for investment. In 1974, it was the large institutions themselves which saved the banking system by lending the banks money and by purchasing property previously owned by property companies which by then no longer existed. In other words, the institutions were very much part of the "lifeboat" operation.

The property crash was caused by a property boom followed by falling demand, a rent freeze, harsh monetary policies and legislation to tax property development. The result of these events was to make the UK investing institutions greater owners of commercial and industrial property than in any other country in the world. Hence they became increasingly influential in the shape of the UK property market.

It was not until the early 1980's, when demand for office and in particular industrial space fell dramatically as a result of the recession, that the influence of institutions in the market began to wane. Between 1982 and 1988 the banking sector came back into the market and bank loans outstanding to property companies increased from less than £3 billion to more than £15 billion. By the end of 1987 there was clear evidence that institutions were once again increasing their net investment in the property sector of the investment market.

2.5 National and Micro Economic Policies

The shape of the UK Property Market has also been influenced by other Government legislation. When Government passes acts of parliament to achieve a stated objective, they indirectly and often unknowingly cause other changes although the changes may not be immediate but may take years to reach fruition.

One of the features of the Town and Country Planning Act 1947 was to impose a development charge of 100% on the increase in value of land resulting from new development. Although this piece of legislation was repealed, there have been several attempts since 1947 to impose a similar development charge of tax on development of land. All such enactments relating wholly to land have now been repealed.

In a market economy, for production to take place, a surplus (or profit) must be produced. In other words, the sale price realised by a product must be greater than the cost of producing that product. In a planned economy, where production is often dictated by hegemony, market forces are normally unimportant as a way of determining peoples wishes.

For a variety of reasons "land" as been singled out for taxation on a number of occasions but it was the 1947 Act which had the most dramatic effect on the market. This was coupled with the need, due to the shortage of materials in the postwar period, for building licenses to be issued before development could take place. The problem was that in the immediate years after the war the economy expanded faster than the supply of buildings. Hence there was pressure on the government to repeal the system of building licenses which eventually disappeared in November 1954.

The economy continued to expand so fast that, within 12 months of 1954 a stringent and lengthy credit squeeze was started with bank rates rising from 3% in mid 1954 to 7% in September 1957. In other words the cost of short finance necessary for building construction had more than doubled. Controls were also imposed on banks but then as now, banks were only one type of finance.

Insurance companies, as previously explained, were largely outside the control of the governments monetary policy. Publicly quoted property companies therefore turned their attention to insurance companies as a source of funds. As previously discussed insurance companies therefore became increasingly involved in providing finance for property development. Indirectly and unknowingly the government of the day had encouraged life insurance companies to become involved with the property market.

The credit squeeze of the 1950's and subsequent times have had other effects on the property market. At times of credit squeeze, the manufacturing and trading companies have often experienced liquidity problems; the income of the company from the sale of products has been insufficient to meet outgoings including short-term borrowing from the banks. Companies have often found themselves in a highly geared situation; the ratio of debt capital, often bank loans, become disproportionately large in relation to equity capital.

One way that manufacturing and trading companies have found for improving their liquidity problems and reducing the interest payments on debt capital has been to realise the value of some of their assets. The disposal of freehold interest in return for leaseback has been one way, in the past, of realising capital to reduce borrowing. Over the last 20 years both large and small manufacturing trading companies have sometimes resorted to this financial tactic to preserve themselves. Once again government monetary policies have indirectly and unknowingly often encouraged industrial and commercial companies to hand over the freehold of their property to life insurance companies.

Property played an increasingly important part over the 1960's and 1970's in many takeover battles. The concept of "asset stripping" became prevalent in cases where the land value of trading companies was not accurately reflected in their account.

Particularly during the 1950s and 1960s companies often reflected the value of their assets at their original cost. Also trading companies were often paying only a small dividend, as a result the market value of the company's shares could be relatively low. The potential gain from purchasing the trading company as a going concern at a low market value and selling off the property assets and realising the full value was often enormous. Hence, on the one hand trading companies were often forced into the situation of selling off their freehold and leasing back from investing institutions. On the other hand, investing institutions and property companies also often indulged in the process of "asset stripping" so that the full value of property assets could be realised.

2.6 Taxation of Property

A number of pieces of taxation over the decades have also changed the position of investing institutions in the property market.

The Finance Act of 1921 gave certain tax advantages to pension funds and life insurance companies running pension funds or an annuity business. As a result of the act not only can contributions offset contributions to a fund against Income Tax, but the earnings of the fund, received from investments also accumulate free of tax. The privileged tax position of pension funds and life insurance companies involved with this sort of business still remains today. However, in 1984, the government removed the benefit which could accrue to tax payers when making contributions to their own life insurance policies.

It was the change to Corporation Tax in the Finance Act of 1965 which, for a time, dramatically changed tax status of taxable companies. The 1965 Act introduced the concept of Corporation Tax. This taxation had two elements; Corporation Tax on income which rose to 52% by 1984 but fell back again to 35% by 1986 and Capital Gains Tax. This was a tax on the capital gain after 1965 between the original cost of purchase of an asset and the eventual sale price. In 1982 this onerous burden, which in effect became a tax on inflationary gain rather than real value changes, was amended. The concept of indexation to the level of inflation was introduced such that Capital Gains Tax in recent years has only been payable on the surplus gain over the above inflation between the date of purchase and the date of sale. Since 1988, all gains before 1982 have been removed and are no longer liable to CGT.

The important aspect of this taxation is that pension funds and pension fund and annuity business of life insurance companies continued to be exempt from such taxes. In other words, financial institutions continued to be in a favourable tax position as far as the ownership of property is concerned although it is significantly less favourable than it was at the beginning of the 1980s. The imposition of Value Added Tax on all building works will also go against the interests of institutions, particularly those involved with property development. As they are exempt from VAT they will find it difficult to offset this tax burden unless special arrangements are made.

2.7 The Property Market Since 1982

1982 has become a watershed in the UK Property Market. As a result of the increase in oil prices in 1980 and the downturn in world trade, demand for property fell away quite dramatically. The recession in the economy and the property market in particular, resulted in many institutions reassessing their investment attitudes to property.

Since 1982 the tax regime, as previously mentioned, has been far more favourable to property companies and owner occupation. During the early 1980's the investment market has generally witnessed a dramatic improvement in investment performance with equities often showing the returns in excess of 20% per annum until October 1987, whilst property performance often performed at below 10% per annum. In 1988 property investment returns exceeded 20% for most portfolios.

It was the new entrepreneurial property companies who were able to benefit most from the changes in the property market as they had not had to suffer the "inertia" of previous investment decisions. By the mid 1980s the market had changed quite dramatically with the financial institutions not dominating the property investment market to the degree of the 1970s. An increasing number of industrial and office buildings have become owner occupied ranging from City of London office buildings being owned by those who trade from within them to industrial buildings often being purchased back from life insurance companies and pension funds who had acquired them a decade earlier.

The more astute property investment companies have also returned to the investment scene, a position from which many had retreated in the 1970s. With the changes taking place in the property market, the banks have also returned to the market after their unfortunate experiences in the period 1973-1974. Hence, in the second half of the 1980s, there is a greater variety of finance and investment opportunities than a decade earlier. Investing institutions are still in the market but property companies are far more active as developers, as traders in property and as investors. The merchant banks are also providing far more finance for property development than for more than a decade.

By 1988 it was clear that, not only in the Central London office market, but throughout the country, the property market was into a new stage in the market cycle. The slow increase in employment since the low point in 1982 had eventually absorbed the many surplus office and industrial buildings to such an extent that rental values started to rise quite dramatically encouraging developers to once again consider the advantages of office, business space and industrial investment throughout the country.

At the same time many investing institutions who had disinvested from property in the early 1980s, rearranged their existing portfolios or only acquired retail property, were once again endeavouring to increase their exposure to the retail, office and industrial property investment markets.

2.8 The Cyclical Market

An understanding of the cyclical pattern of the property market (as shown by Table 2.1 and Table 2.8 which follow) is a subject which only recently has been taken seriously. In 1988 forecasting, using econometric modelling, began to gain interest due to the fluctuations in investment performance in the 1980s as a method by which investors could gain a better understanding of the property market in the future. This type of analysis has to be seen as an adjunct to the effect of design on property investment performance in the future as both cyclical fluctuations and design influence investment returns. The performance of office investments in the past as shown by the following table will be discussed in Chapters 11 and 12 in relation to the Property Investment Design Appraisal Model.

Table 2.8.1 Property Value Trends

	Retail Price Index		Healey & Baker PRIME Office Survey		The Property Index		
	Index	Yr on Yr % Change (Mid Yr)	Index	Yr on Yr % Change (Mid Yr)	Rental Income	Capital Growth	Office Property Yr on Yr % Total Performance March on March
1977	100	-	100	-	N/A	N/A	N/A
1978	107	7.0	116	16.0	N/A	N/A	N/A
1979	120	12.1	135	16.4	N/A	N/A	N/A
1980	145	20.8	153	13.3	N/A	N/A	N/A
1981	161	11.0	175	14.4	5.4	9.2	14.9
1982	176	9.3	187	6.9	5.6	6.0	11.8
1983	182	3.4	197	5.3	5.6	-0.6	5.0
1984	192	5.5	208	5.6	6.2	1.0	7.2
1985	205	6.8	226	8.6	6.4	-1.6	4.7
1986	210	2.4	239	5.7	7.1	-2.2	4.7
1987	219	4.3	272	13.8	7.1	4.3	11.5
1988	228	4.1	355	30.5	7.0	26.9	35.0
1989	247	8.3	461	30.1	6.0	28.4	35.4

Source : CSO, Healey & Baker, The Property Index (Produced jointly by Healey & Baker, Jones Lang Wootton, Richard Ellis and Hillier Parker).

Chapter 3

THE RATIONALE FOR PROPERTY INVESTMENT

Chapter 3

THE RATIONALE FOR PROPERTY INVESTMENT

3.0

The purpose of this chapter is to provide a background to the property investment market in the UK. The chapter will be referred to in Chapters 10, 11 and 12. It is based entirely on the authors own work although several sections have appeared in various books, papers and journals in recent years. The objective is to identify the investment characteristics of property which vary considerably from other types of investment. It is a necessary part of understanding the Property Investment Design Appraisal Model put forward in Chapter 12.

The most important criterion influencing the purchase of any property for investment purposes is location. This is the most crucial factor determining its present and future rental and capital value investment. In other words, the growth potential of the investment largely rests in the location of the asset. This chapter provides a general guide to the principal locational and design criteria which influence property investment decisions.

3.1 Investment Property

All investment is concerned with forfeiting the use of resources, normally financial, at a moment in time in the hope that there will be a return on that investment in the future. The return may be in terms of capital and/or income. In this respect property is like any other investment; an investment property is expected to generate rental income and increase in value as a capital asset. However, every investment involves risk and generally speaking the level of risk is commensurate with the expected level of return. The higher the risk the greater the level of return.

There is a subtle difference as far as the property market is concerned between investing and short-term trading. Trading involves spending money on property or property development where the risks are relatively high yet the potential financial gain is also high. This may be because, for instance, the property is unlet at the date of the purchasing decision or it does not have planning permission for the intended use. The concept is that of creating "value" or waiting events until "value" is created. For instance constructing a new building creates a total value which is normally greater than the sum of the cost of the land and the buildings construction.

Investment, on the other hand, is concerned with perhaps more modest financial rewards where the risks are relatively low. Sometimes, unknowingly, an investor inadvertently becomes a trader due to an error in his investment decision. Generally though, an investor is seeking a secure investment where there is a relatively secure return expected from the investment.

Investing institutions normally fall into this latter category. Unlike property companies, they do not normally seek to trade property developments. Instead they prefer to purchase property which will form a sound financial investment over a number of years. This is not to say that some institutions do not from time to time indulge in short-term property investment decisions. Property performance league tables published by a number of organisations in recent years have put pressure on institutions to seek property investment situations where there is an early financial gain. A property where the rent review is imminent is one such potential situation where the capital value may rise significantly once the review is complete. (McIntosh and Sykes 1985).

Investment institutions rarely purchase sites which do not have the benefit of planning permissions and where the chances of letting the eventually constructed building are remote. Instead they normally either purchase commercial and industrial buildings which are built and let, or they become involved in well-secured development situations. Such a situation might involve a site with the benefit of planning permission where the proposed building is pre-let to the eventual occupier. In other words a potential tenant has already signed a legal document agreeing to take up a lease and pay rent when the proposed building is complete.

Even in this situation there are risks. The building may never be satisfactorily completed or the potential tenant may go into liquidation before the building is complete. For this reason substantial tenants are preferred such as publicly quoted companies.

The so called "covenant" of the tenant is crucial to the investment decision. The rental income to the investor is paid by the tenant and, therefore, to reduce the investment risk institutions have a strong preference for publicly quoted companies or public authorities as tenants.

Property investment is essentially concerned with investing in property which will produce a secure rental income over a number of years and which may also gain in capital value. Investors concentrate on investing in offices, shops, warehouses and industrial property. In addition, many investors have purchased property overseas. An institutional investor therefore will normally have a diversified portfolio of property investments which will be part of an overall portfolio of investments including gilts and equities.

3.2 Investment Criteria

The most important criteria is that the property purchased will let and generate a rental income. In this respect investment surveyors, when considering a property to purchase or to value, look at the property in relation to a number of headings:

a. Location

This is the most important factor. Even if the present tenant goes into liquidation a well located property should re-let relatively quickly. For this reason the property investment market often states that the three things of importance when purchasing an investment property are "location, location and location". Even a badly designed building will let if it is in a desirable location. Identifying a location which is in demand and will increase in demand is beyond the scope of this thesis but is one of the skills of an investment surveyor.

b. Design

This is the next most important consideration and must be examined in relation to the property's intended use. The property's appearance, the functional space it provides and the cost involved in using the property each have to be considered. This is obviously one of the main themes of this thesis and will be expanded upon.

c. Tenure

The nature of the tenure and the legal restrictions which may be imposed on the land are important. In this respect freehold property is preferred to leasehold property. However, there are a variety of long leasehold arrangements which can be purchased by investors; the exact nature of the rental income. In practise landlords and tenants (long leasehold investors) rarely have the same ambitions and it is therefore difficult to cater for all eventualities. When disposals, refurbishment or redevelopment are considered, problems sometimes arise which encourage investors to favour freehold investments.

d. Tenancy

The actual tenant and the lease document (which makes that tenant a contractual party to the investment) are both important. As previously mentioned, whether the tenant is a private individual, small company or publicly quoted corporation can influence the level of investment risk. The lease itself dictates the nature of the rental income. A badly worded lease can dramatically influence the rent received at rent review and hence the rental expectation from the investment.

e. Occupational Lease

The occupational lease contractually links the investors asset to a stream of income (rent) from the tenants. In the UK a "standard" lease is for 25 years with the provision that every 5 years the rent may be reviewed to the "open market" rental value at that time. Most leases now specify a procedure for settling the rent at the rent review date if the two parties are unable to agree the new figure. Normally the President of the Royal Institution of Chartered Surveyors will be called upon to appoint either an "expert" surveyor or an arbitrator to settle the rent.

The income received by the investor is net or "clear" rent. The tenant is responsible for fully repairing and maintaining the property and is also responsible for insuring the structure. Where the building is multi-let as in the case of a shopping centre or office building with several tenants, the insurance, management and repair may be undertaken by the investor for all the tenants. He then charges a "service charge" rent in addition to the rent paid for the use of the premises.

3.3 Prime Property

The concept of 'prime' property is an integral part of this method of analysis involving the above four categories. Inevitably there is an element of judgement involved in defining whether a property is 'prime'. Simply stated, a prime property is one which is located in the best position, is new and well designed, is of a lot size (value) which is popular with investors, is freehold with no restrictive covenants and is let to a sound tenant on a modern well drafted lease.

A number of organisations involved in the property investment market regularly publish their assessments of the prime investment yields applicable to each of the three categories of property, namely office, shop and industrial. A yield in this context relates to the annual return which may be expected from a rack-rented property expressed as a percentage. It is important to note that not only are these assessments of prime yields subjective but based upon a knowledge of the market. The concept of prime only relates to a very small section of the investment property market. Perhaps only 1 or 2% of investment property can be considered prime in every sense.

3.4 Secondary Property

Many investment properties fall into the category of 'secondary'. Again such a definition is subjective, but, given that there must be by definition a dearth of prime property, the majority of investment property is secondary although some property is more secondary than others. In other words prime yields are not applicable when assessing a secondary property's capital value.

An examination of investment portfolios reveals that there is a significant variation in the proportion of funds allocated to the principal investment categories. For instance, some portfolios specialise in retail property whilst others have a bias towards industrial property. Having the correct mix of property is crucial, particularly for unitised market-orientated funds. An unquoted occupational pension fund has less pressure on short-term analysis and can, therefore, invest in property which may show a longer-term return yet in the short-term may not perform particularly well.

An example of the mix which might be found in a property investment portfolio is as follows:

TYPE OF PROPERTY	PERCENTAGE OF PORTFOLIO
Shops	50 - 70
Offices	15 - 25
Industrial and Warehousing	15 - 25

It is difficult and perhaps misleading to consider a property portfolio simply in terms of the above classifications. Some funds deliberately buy short term leasehold investments or high yielding stock where the strength of the lessee and the high investment yield is more important than the building's location, its design or expectation of rental growth.

3.5 The Location of Investment Property

When considering an investment, the location, as already stated, is still the most important factor for most properties. The property will be considered in relation to the country it is in, the region within that country, the town or city within that region, the area within that town or city, and finally the road and position within that road. Understanding financial geography is critical to property investment.

An understanding of road, rail and air communications is vital in the consideration of location. Understanding such things as the influence of car parks and motorways on property values is important particularly when there are plans in hand to change the pattern of roads and car parking. The M25 London Orbital Motorway has had considerable influence on property values and business location.

Rail transport is most important when considering office investments. It is one of the ironies of modern cities that down-town or central district land-use is dependent on an efficient public transport system. Normally this includes a rail network. Whilst land values increase and businesses may prosper in the central area, private market forces are rarely sufficiently strong enough to make the transport system profitable.

The growth of air travel has significantly influenced the pattern of land use in the last two decades. At the heart of the Golden Triangle on the west side of London is Heathrow Airport. 'Golden' is applied because land and property values have increased significantly in recent years within this particular area and High Wycombe, Guildford and Hammersmith form the apices of this triangle. The M4 motorway from London to the River Severn bridge represents the Western Corridor or Silicon Valley due to the growth of electronics-orientated industry along this route. The influence of Heathrow Airport has also significantly aided this development and growth of property values.

The art of good property investment is to assess the property situation where the investment risks are minimised yet the potential for growth, in capital and rental value, is maximised. Although it involves scientific methodology it may be considered an art as it requires appreciation of the location and other factors in relation to the price of the property being considered.

The price of any property is related to the rental value. Thus the art of good investment involves anticipating those locations and properties which are going to show rental growth which is above average for similar properties and hopefully above the Retail Price Index (RPI).

When considering location it is important to note that the polarisation effect caused by economic behaviour is often reinforced by government enactments. Town planning restrictions may reinforce the natural shortage of land for development in these sorts of areas by either preventing development or only permitting a particular kind of land use on certain conditions. The following is an example of one such policy:

"During the plan period, office development proposals will be restricted to appropriate locations as defined in (the) policy ... and will be considered within the overall context provided by the following principal factors which will be formally monitored annually by the local planning authority:

(i) town centre and site environment considerations

(ii) the capacity of the transport system

(iii) the availability of car parking spaces

(iv) the availability of labour

(v) the demand for office accommodation

(vi) the effects of new office technology

(vii) the achievement of planning advantages in accordance with appropriate council floorspace and outstanding unimplemented planning permissions for office development"

SOURCE Kingston Town Centre District Plan - written statement. July 1982.

Other planning authorities insist that a named occupier is provided with the planning application or that the building, when eventually built, should only be used by a company already located in the borough or county. The effect of such policies is to reinforce the market forces and make property investment in such locations even less risky.

Understanding the forces of supply and demand for a particular property in a particular location is important for an appreciation of property investment. Having analysed the other buildings which are similar in a particular locality, the recent trends in the letting market and the rental values paid for similar accommodation, a property investor has to apply considerable subjective skill in valuing a property and/or deciding whether to purchase a property for investment purposes. The following sets out the advantages of investing directly in property, rather than property unit trusts or property shares which a property investor needs to consider.

3.6 The Advantages of Direct Property Investment

I The investor has more control over the properties purchased.

II When large sums of money need to be invested, fewer acquisitions need be made as each building may cost several million pounds. In other words, large sums can be invested in a small number of individual units relatively quickly.

III Property values are generally less volatile than shares as was shown by the table of performance produced by Wyatt shown in Chapter 3, and can usually be expected to rise but not necessarily in line with inflation.

IV When the stock market is depressed it is still normally possible to set property at a reasonable value. The forces which determine property values are not identical to those forces which influence share values.

V Property companies are often highly geared making their return less secure than other shares or direct property investment.

VI The dividend on equities is paid half-yearly in arrears yet most commercial property leases nowadays require the tenant to pay rent quarterly in advance.

VII Dividends on equities are taxed at source: the investor only receives dividend income net of tax, and tax-exempt funds must subsequently recover the tax. Property rent is paid gross before any deductions for taxation are made. For gross investment funds, such as pension funds who are exempt from tax, this makes a significant difference to the return on the investment.

VIII Rent is paid by a tenant even if that tenant, as a company, is making a loss.

IX Rent is the first call on tenant's income and is paid even before interest on debentures or bank loans. For this reason, rental income is a more secure form of income for an investor.

X Even if the tenant goes into liquidation, the investor still has an asset; the property itself. Following liquidation, a company's equities often only have a minimal, if any, value.

XI Most modern commercial property leases provide for the rent to be reviewed in an upward direction every 5 or possibly 3 years. The investor therefore, has a way of making sure his income is reviewed to currently prevailing market levels at regular intervals, regardless of the tenant's profitability. Such a system reduces the investor's risk in time of inflation. Because the tenant pays rent and does not need to raise mortgage finance to purchase his property, he also can reduce his risk. The financial gearing of the company is improved as the company's debt capital in relation to its equity capital is improved. The interest on mortgage finance is particularly susceptible to variation, often as a result of government monetary policy. Such interest rate changes increase the risk of using mortgage finance to own property.

XII A vast amount of commercial property is occupied by private companies, or other organisations who do not raise finance by issuing shares. It is, therefore, not possible to purchase equities in these companies. Through the medium of property investment, it is possible to benefit financially from the growth of certain sectors of the economy. The expansion of building societies and mutual life assurance companies in the last 20 years is an example. By purchasing certain property favoured by these organisations, it is possible for an investor to benefit financially from the demand for property created by these expanding organisations.

XIII The expansion of government departments is another example of the same phenomenon. During the 1960's, the government was often referred to as the 'developer's friend'. With the growth of the Civil Services and the mushrooming of salaried employment, the government demand for offices increased. The developers and the investing institutions obliged and discovered a lucrative medium for investing their funds. Whilst government departments often do not maintain buildings to the highest standard, the rent they pay is secure. Unlike a private or publicly quoted company, governments do not go bankrupt. Whilst the interest paid on gilt-edged securities remains unchanged throughout the life of the stock, the rent government departments pay for office accommodation is generally subject to reviews at 5-yearly intervals.

3.7 Understanding Property Investment

Commercial property ownership clearly has certain advantages as an investment medium as indicated above when compared with equities, including the equities of property companies. However, there are also some potential problem areas which need to be noted. The following set out some of these, which are in no significant order of priority.

I Property investment has a very low liquidity. It is often time consuming and expensive in professional fees and stamp duty to purchase a building. Even at times of significant inflation, property values only increase gradually. It may take many months to sell a building and selling is also expensive in terms of professional fees. The problem is best explained with a simple example.

Imagine a property cost £1 million to purchase. The fees and stamp duty cost the purchaser approximately 2.75%. The total cost is therefore £1,027,500. The property has got to increase in value by nearly 5% before the purchaser can recover all his capital costs of purchase and sale. Suppose that he sells the same property for

£1,050,000, representing an increase in value of 5%. As vendor he incurs sale costs of about 2%, made up of surveyors and legal fees. In other words he receives only the net figure of £1,029,000 as the proceeds of the sale. Ignoring the rent, he has only made £1,500 (£1,029,000 - £1,027,500) as a result of the transaction, a return of a mere 0.15% on money invested.

Although shares in property companies may rise or fall very rapidly, the advantage of holding shares is their liquidity; they can normally be easily sold at relatively short notice. The very volatility of the share price offers rapid trading conditions which simply do not exist in the direct property market although the development of the unitized property market will give investors the opportunity of trading their interest in a property.

II One of the critical problems of property ownership as an investment is knowing which property to purchase. Such factors as location and building design can significantly affect the viability of the investment. This problem is particularly acute for an investor first entering the field of property investment. If an investor owns a portfolio say of 4 buildings, he may find that one of his buildings does not increase in value initially due to the structure of the lease or being poorly located. This one building may significantly affect the performance of the entire portfolio, which, as a result will not keep up with the general trend of the property market. Owning property shares is a way of spreading the risk, particularly if the property company concerned owns a wide range of property assets. Another way is to purchase property units.

III Technological change may make buildings become out of date and hence lose their full investment potential. For instance, almost all new office buildings are now designed with a carpeted floor and a suspended ceiling. Buildings constructed during the 1960s without those refinements no longer command the best rents. Industrial buildings also suffer from technological obsolescence. Owning shares in a property company which owns modern buildings relieves the investor of the problem of when to dispose of a depreciating building.

IV Changes in transport investment and management can have significant affects on property. For instance, a decision to cease routing fast trains through a town, or conversely stopping fast trains at a station previously used by slow trains, may dramatically affect property values, particularly office rents. Likewise, the opening of a new motorway or by-pass can also affect property values, especially the value of industrial buildings. Whilst it is in the art of good property investment to be aware of and respond to these changes, they sometimes have unforeseen adverse effects on the investment performance of property.

V Town planning decisions in the UK can also influence property values. Perhaps the most obvious example is the result of the pedestrianisation of a shopping street. Retail property within the pedestrianised zone often increases in value. The converse is true of shops outside a new pedestrian area; the capital value of such premises may fall back dramatically over a period of a few months and wipe out the increase in capital value which has increased steadily over 10 years or more. The opening of a new shopping centre may have a similar affect on existing property values. Owning property shares, which are usually readily marketable, does not require the investor to be involved in factors such as town planning decisions which may affect property values.

To avoid the problems which may arise with direct property investment it is increasingly important to undertake regular portfolio analysis and indulge in active portfolio management.

3.8 Investment Portfolio Analysis

Portfolio analysis is the measurement and historical review of individual properties and groups of properties within an investment portfolio. It has an increasingly important role to play in the process of active property investment portfolio management. A prerequisite of property performance measurement is a regular valuation of all properties. An annual valuation is the minimum yardstick for property performance measurement.

From valuation data and from details of a portfolio's cashflow (both rental and capital), it is possible to measure:-

* capital returns
* income (rental) returns
* total rates of return
* rental growth

These figures can be calculated over the short term (one year) or over a long period (since date of purchase). The results can be presented for an individual property, groups of properties or for the portfolio as a whole.

The most valuable part of Portfolio Analysis is the review of the portfolio in relation to the property market. A review of each property aids management decisions in relation to:-

* future investment strategy
* restructuring a property's tenure to maximise future performance
* disposing of property which has past its performance peak
* regeneration performance by refurbishment expenditure

Portfolio analysis should be undertaken independently by analysts who draw upon their extensive day-to-day knowledge of the property market. This regular, independent and systematic appraisal of a portfolio can uncover overlooked opportunities.

The analysis will benefit from comparing the portfolio with regular monitoring of rental levels, investment yields and the level of supply and demand in different sectors of the property market.

A portfolio review requires a close liaison with a fund manager so that a balanced view between an independent analysis and a detailed involvement is achieved. With the aid of sophisticated computer software it is possible to analyse an investment portfolio of fewer than ten properties to one containing several hundred.

3.9 Conclusion

The essential ingredient to direct property investment is understanding the market and knowing how to measure investment performance over both the short and long-term. In the present market the level of sophistication used to undertake portfolio analysis is generally very limited. Valuation risk (see McIntosh &

Sykes 1985) and performance risk is rarely considered and only intuitively arrived at using current valuation methods. The influence of office building design on expected performance is rarely considered apart from a rather general intuitive way. No analytical methodology exists to assist with such analysis. The application of the Property Investment Design Appraisal Model put forward in Chapter 12 could enhance the portfolio manager's understanding of his investment and, by taking appropriate action, could result in improved investment performance.

Chapter 4

A LITERATURE REVIEW

Chapter 4

A LITERATURE REVIEW

4.0 Valuation and Building Design

For many decades until the 1970s there was only one book of any note used by those involved with landed property; "Modern Methods of Valuation". The last edition was updated by D M Lawrence, W H Rees and W Britton (1971). In 1988 another edition was being written.

The objective of this book was "to combine the principles governing the valuation of land and buildings with an account of the application of these principles to everyday problems". It clearly identified that valuation is very much concerned with quantifying the price of a legal interest in land - with or without buildings. The five principal methods of valuation were identified; comparison, cost, development, going concern and investment valuation.

Interest rates, investment yields, net income tenure, out-goings and the construction of valuation tables were the staple diet of this text with other matters such as life interests, the principles of the Town and Country Planning Acts and the various Landlord and Tenant Acts explained. The influence of taxation both local (rating) and national was explained as it affects property values as was law relating to compulsory purchase and the various housing acts.

In the section of this book covering office property, there is a general description of offices followed by explanations of the income, terms of tenancies, outgoings plus a description of services such as heat, light and cleaning provided in office property. The methodology of valuing the net income is then set out.

With the exception of such phrases as "The average cost of repairs will depend upon the type of construction, the planning and age of the building ..." there is no reference or discussion of how design may or may not affect the buildings value.

A F Millington (1982) whilst making the following comment "There has therefore been a seemingly unending demand for well-located office building, especially those built to modern standards of design and possessing modern facilities" - there is no explanation of how design influences value or how the valuer should intuitively adjust the All Risks Yield or Equivalent Yield to accommodate different levels of design.

A typical investment valuation of a commercial building generating a rental income would be set out as follows:

Rent Net (with tenant fully responsible for all repairs, maintenance and insurance)	£100
Capitalisation in Perpetuity @ 5% All Risks Yield	20 Years Purchase
Gross Capital Value (before deductions and purchase costs to arrive at market price)	£2,000

Alternative valuation where a rent review is due in 2 years time (n) where the new rent is R:

Rent Net (r)	£80	
Capitalisation @ 6% (y)	16.66	
(The Equivalent Yield)		£1,333.3
Increase in 2 years (R-r)	£20	
Capitalisation @ 6% (y)		
and discounted @ 6% $1/(1+y)^n$		£ 296.65
Gross Capital Value		£1,629.95

An alternative way of writing this is as follows:

$$C = \frac{r}{y} + \frac{R-r}{y(1+y)^n}$$

A Baum and D Mackmin (1981) take a more modern approach to the valuation of property, especially explaining the discounted cash-flow method of valuation which was later expanded by the author in a number of articles (McIntosh and Sykes 1984). But once again, although Mr Baum later looked at the problem of design and obsolescence (to be referred to) this book makes no reference to the influence which design may have on property valuation or investment appraisal.

McIntosh (1982) tried to draw attention to the cyclical movement of the market, the influence of the government monetary policy at that time and the application of the "Accelerator Theory" (Lipsey 1963) to the property market. No reference was made to design but the article was then anticipating accurately the down turn in property performance which lasted from 1982 until 1987. It was in this period that "good design" had a significant influence on the lettability of new office buildings as will be discussed later.

A number of other texts (forexample Brandon 1982 & 1984) examine the cost planning approach to building construction and also refer to such concepts as the Housing Cost Yardstick and the Education and Hospital Cost Limits. Whilst many of these are comprehensive in their nature, they also do not consider the concept of design and how it influences the consumer's attitude to value. There is an important distinction between production cost and market value; a change in one will not necessarily cause a change in the other.

It is the influence of design on the financial implications of market value, rather than production costs, which is the main focus of this thesis.

4.1 Depreciation and Obsolescence Rediscovered

Bowie (1982) presented a paper to the Society of Investment Analysis. Although he had been a partner with surveyors Jones Lang Wootton, and although at the date of the article he was a Consultant Partner only, many of his colleagues claimed that his view of the market was irrelevant! In fact his paper, which was later published on the subject of depreciation (Bowie 1982) had a significant influence on thinkings.

This article reminded the property market that "buildings do wear out". If it is appropriate for an owner of an office building to provide for depreciation in his accounts, "then the owner of an identical property let to a third party on full repairing terms must recognise that ... rental income must include an element of depreciation".

Bowie identified curable (ie. paintwork) and non curable (ie. poor design) obsolescence but a tenants repairing covenance cannot extend to correcting poor design. The market accounts for obsolescence by adjusting the investment yield upwards according to the markets perception of the speed of obsolescence.

Bowie identified three causes of obsolescence; physical, functional and environmental (locational) obsolescence but also pointed out that the speed of obsolescence is much faster than the market realises. It is often said that industrial buildings have a life of around 40 years - but look at a 20 year old estate and obsolescence stares you in the face. This implies that 20% of the income would need to be set aside for depreciation. Such deductions are not allowable against tax although plant and machinery allowances on a 25% reducing balance basis is permitted.

Bowie showed how the value of a property investment could be broken into the land element and the building element, varying ratios depending on the nature of the property from prime to secondary. This would result in the investment yield for each property being adjusted to the "true net income" yield to reflect depreciation. Although Bowie's paper did not discuss design, it was clear that design was very much behind the whole issue of obsolescence, a subject which, unlike North America and mainland Europe, had been largely dismissed in the late 1960s and 1970s by property investors and developers. The recession in the early 1980s and especially

Bowie's paper suddenly made the market aware of this subject.

4.2 Financing Depreciation

McIntosh (1983) suggested that the "sale and leaseback" funding arrangement used extensively in the UK was "an unsatisfactory way of funding certain types of "high technology" industrial buildings".

The paper suggested alternative property investment financing arrangements were needed which were "more suitable for both the investor and the occupier".

This paper examined the design difference between a "standard" industrial building suitable for a variety of light industrial and warehouses uses. This was then compared with the specification of the new breed of "high tech" buildings then being constructed. (High tech later became redefined into low tech, mid tech and high tech with this latter category becoming "business space" under the 1987 Town and Country (Use Classes Order Class B1).

The dilemma set out in the paper was that investors could see the land value of their investment was increasing but because of the specialist nature of "high tech" building design they were taking a cautious approach to investing in these new buildings. The paper therefore put forward the equity linked mortgage concept as one way round the problem which also enabled the investor to benefit from taxation allowances which at that time were 75% initial allowance on industrial buildings with a 4% annual allowance thereafter and a 100% plant and machinery allowance of where appropriate, a 25% reducing balance annual allowance.

In effect, it was suggested the investor acquire the site as the equity and lease it on a normal basis but invest in the building by way of an option linked mortgage. This would be a loan which would be written off over the life of the building.

This paper in effect took the concepts discussed by Bowie a stage further such that physical and functional (design) obsolescence would be taken care of by the mortgage finance arrangement, leaving the investor to become an equity investor in the land which might suffer environmental (locational) obsolescence but would be easier to analyse in isolation of the other influence of obsolescence.

4.3 Depreciation and The Consumer

McIntosh (1984) put forward the hypothesis that the commercial property investment market in the UK does not necessarily promote good design. The paper aimed to show how good and bad design influences a buildings market value and why property market forces and investment appraisal methodology may lead to bad design. It pointed out changes taking place in the market which might lead to better design in the future.

The paper put forward an idea which is common in North America but rarely discussed in the UK; that a building is a product with a producer and a consumer. It also distinguished better property (a legal ownership) and a building (a physical structure). The type of property ownership, it was suggested, had a considerable influence on the building (product) design.

The paper identified different types of ownership including freehold owner occupation, short leasehold tenure (less than 25 years), full or partial ownership by development companies and ownership by institutional investors. It suggested that long term investors might have an excessive influence over design due to the method of property valuation practiced in the UK. The paper states:

"Whilst architects are concerned with "design" and quantity surveyors with "cost", an investor is concerned with "value".

Location is often far more important than design, hence poor design or rather the low priority placed on design by investors. Although the paper set out the concept, in terms of outline specification, of a well designed office building, it then stated:

"The concept of flexibility underlines the design difference between an owner occupier and an investor. The former may have a specific purpose in mind and will wish to have a building designed accordingly. An investor, on the other hand, will require a building designed to accommodate a variety of different office tenants' needs" (McIntosh 1984).

The paper used the example of Millenium House, Kingston upon Thames (later visited in connection with this thesis) which at that time remained unlet after a period of 6 years at an asking rent of £7.50 per sq ft per annum yet other lettings had taken place nearby at £10 per sq ft per annum and, as illustrated later in the paper, Catherine House had let at more than £13 per sq ft per annum. Millenium House is discussed in detail later in connection with the National Office Survey.

The paper (McIntosh 1984) then set out a conventional valuation based on the tenant taking a full repairing and insuring lease and only paying a "clean" net income to the investor. This was followed by a valuation assuming the tenant pay a gross rent from which the investor would have to deduct the cost of annual maintenance and repairs (an expenditure risk to the investor rather than the tenant) to arrive at net rent which, in North America is referred to as the Net Operating Income.

The problem illustrated showed the difficulty which in capitalising a net income (which might vary year to year) with valuing a "clean" net income which would remain unchanged for 5 years until the rent review. If however the investor did not receive a "clean" net income he would have more incentive to improve the design, especially in terms of running costs but also in attracting the best rental income, especially if shorter leases were used and there was a continual turnover of tenants occupying the investment.

The paper suggested that depreciation was due to aesthetic, functional or locational obsolescence or a building's cost-in-use may increase. To account for this, the market capitalisation yield is generally increased for older buildings.

McIntosh (1984) identified changes in the market, partly caused by fiscal changes, which were encouraging owner-occupation, the resurgence of property companies as investors and the growth of fully furnished and serviced office suites with the tenant paying a full rent for the accommodation and the services included in the use of secretarial assistance. The suggestion made was that these changes would make the owners of office buildings more responsive to changes in tenants' needs and that design would be improved to accommodate these changes.

Prophetically the paper suggested that the concept of serviced office suites would become more widespread and that the UK market's penchant for a 25 year lease, during which design could not be improved, was on the wane.

4.4 Depreciation and Market Value

North (1984) suggested that depreciation was an accepted concept but that the differences were "in respect to the methods and procedures of estimating the extent of accrued depreciation" which "occasionally calls for a propitious application of the cost approach and the attendant ability to arrive at an appropriate estimate of accrued depreciation".

Bowie (1984) returned to the themes of depreciation in an article where he stated: "The UK has one of the most sophisticated institutional property investment markets in the world. The recent introduction of property performance measurement systems and the better understanding of the market by managers and advisors coincides with the progress made by the surveyor and valuer in dealing with this important topic of depreciation". Once again Bowie did not address himself to the inter-relationship between depreciation and design.

The first serious market study of the relationship between depreciation, valuation and investment risk was undertaken by Francis Salway (1986) who suggested depreciation was a greater problem than previously realised. He suggested that investors were misguided in attributing such low yields to office investments. Salway acknowledged that "obsolescence is an inevitable consequence of rapid economic and technological change. However "the principal attraction of property investment has been that it offers long-term capital appreciation and a hedge against inflation" (P 35). But depreciation undermines investment performance.

Salway collected data which showed that the value difference between new and 20 year old office and industrial buildings was 55%. This implied a fall-off of rental value of 3% per annum and a fall-off of capital value of 5.4% per annum.

Even more revealing was the fact that obsolescence was having a more marked impact on property value at a "relatively early stage in the building life cycle". The peak of depreciation, Salway suggested, is between the year 5 and 10, not towards the end of a 25 years lease as the market has previously assumed.

He suggested that depreciation merited particular attention in three areas of property decision-making:

1. Building design can control, to some extent, future depreciation. Life-cycle techniques could minimise deterioration with flexibility and ease of adaption the key design criteria.

2. The duration of the leases should be less than 25 years in many cases so that the owner can carry out improvements to counteract obsolescence.

3. Investment appraisal should use depreciation - sensitive techniques to avoid purchasing over-priced assets and that property portfolios should be actively managed with a view to counteracting and containing problems of obsolescence.

From Salways (1986) work several important points need to be made. The first relates to this method of collecting data. Of 120 investors approached, 63 undertook to complete an interview questionnaire. These represent personal views not evidence of market transactions.

The next point is that the survey was conducted in June 1985, at a time when the office market was still suffering from the effects of the recession and there were a number of surplus office buildings on the market which "coloured" investors views of values. A very different set of results might have been achieved if the same survey had been undertaken in 1987/8.

A number of firms of agents were asked to provide estimates of rental values and investment yields for "hypothetical" buildings of different ages in 32 office and 25 industrial locations for buildings new, 5 years old, 10 years old and 20 years old. As other surveys have shown (Hager and Lord 1985) it may be very unlikely a group of valuers will produce a similar value for an actual building, the variance of result becomes even larger if the building(s) is "hypothetical".

Despite these three limitations explained above, there is no doubt that Salways work represents a major step forward in understanding the problem of design and depreciation.

4.5 Depreciation and Refurbishment

So far the the literature review has not dealt with the problem of refurbishment and its influence on capital value. The general understanding in the theoretical side of the property market was that investors were aiming to achieve a given target rate of return over the long term (the opportunity cost of money). This has often been considered to be 2% higher than the current yield on long dated government stocks - gilts to account for the greater risks and lack of liquidity of property. This is the basis behind Philip Marshall's Donaldson's tables where the objective was to calculate the long term yield which equated to gilts. The property investment yield plus the level of rental growth both contribute to the calculation. This is further explained in McIntosh and Sykes (1985).

All these theoretical calculations assume that the valuer of a property asset when assessing its investment appraisal assumes that there will be infinite rental growth at a constant rate throughout the life of the property which is assumed to be in perpetuity. In reality, although investors may not be particularly analytical, it is unlikely that the majority either think in terms of a long term target rate of return or consider that rental growth will be constant.

Sykes (1984) looked at periodic refurbishment and rental value growth and put forward the statement:

"The market value of any property investment will tend to deteriorate over time when compared to similar modern properties if monies are not periodically expended to mitigate the effects of obsolescence".

Sykes put forward The Refurbishment - Rental Growth Model which allowed for the introduction of regular future capital expenditure both in terms of magnitude and frequency.

The generalised periodic Refurbishment - Rental Growth Model which equates the market capitalisation rate (initial yield) of a property to a rate of future rental growth assuming a certain opportunity cost of money (discount rate) and level of planned capital expenditure is as follows:

$$Y = d \left[\frac{D^N - G^N + RG^N}{D^N - G^N} \right] \left[\frac{D^n - G^n}{D^n - 1} \right]$$

Where:-

Y = the capitalisation rate (initial yield)

d = opportunity cost of money (discount rate)

R = percent of the then refurbished market capital value

N = years following the purchase of the property when first refurbishment is due

D = (1 + d) where d = the opportunity cost of money (discount rate)

n = period between regular open market rent reviews

G = (1 + g) where g = rental value growth rate

Assuming that the discount rate is agreed and the property capitalisation rate also cannot be altered, then the short period between refurbishment (for a given level of cost) or the higher the cost of refurbishment (for a given internal between refurbishment) then the higher the rental growth rate which is necessary.

By interaction using computer modelling, the same equations can be rewritten to calculate the initial yield for a given level of rental growth with an agreed target long term discount rate. In fact the Sykes Model reveals that there is a straightforward linear relationship between the initial investment yield and the refurbishment cost for given intervals between refurbishment.

The Refurbishment - Rental Growth Model therefore provides "a potentially more realistic, though nevertheless simplistic, approach to the problem by incorporating periodic outgoings which are intended to maintain the market ability of the investment at a constant level". It still requires a degree of judgement on the part of the investor as to the timing and extent of the refurbishment necessary which will depend upon the circumstances of the investment. Sykes did not attempt to quantify the nature of the refurbishment or aspects of design which must be considered. Its major failing is that it fails to take into account the cyclical nature of the market and does not recognise that the financial implications of design may be more important at some stages of the property market economic cycle than others.

4.6 Refurbishment and Usability

Henderson (1981), took up the design theme when he said "Property valuation is not an exact science, it is little wonder that most building society surveyors tend to be conservative in their appraisals". Henderson assessed a building's usability which he related to ten headings and referred to a Usability Index:-

1. Usable Space - the net internal area for offices
2. Shape and dimension
3. Heating, ventilation and lighting
4. Provision and distribution of services
5. Structural arrangements
6. Acoustic ceilings, carpets etc
7. Building facilities
8. External environment and location
9. Running costs
10. Overall quality and condition

He suggested that each of these points should be given a weighting factor of 1, 2 or 3 according to the importance of the element from the assessors point of view and that each element given a score on a scale 0 to 5 arrive at an overall usability score. He suggested he did not know how this "could be applied in practice" but it could give an "objective, carefully analysed over-view on the usability of office buildings".

In a later article Henderson (1983) highlighted the difference between speculative design and purpose built design. He suggested that speculative buildings often failed in terms of design due to 4 basic differences:

1. Flexibility of use
2. Environmental standards
3. Cable Distribution Systems
4. Building Facilities

The article suggested that many speculative office buildings were not built to the needs of tenants. The implication being that developers/investors needed to be far more aware of tenants requirements in the way that an architect is when building a purpose-built building for a known occupier.

Both these articles point to an increasing awareness of the deficiencies in office building design yet neither are based upon a systematic survey of office tenants opinions.

Henderson (1984) wrote a further article on the subject of the problems of diverse use in today's office, in which he suggested he had now some "figures" relating to office tenants which amongst other things "show a wide variation in occupation densities". The article concentrated on the problem of cellular versus non cellular (open plan) space but once again concluded if design is approached "with use clearly in mind, then the outcome is likely to be offices which shape up to tenants' requirements rather than the reverse".

Salata (1982) had made similar comments to Henderson on the subject of a shell or the electronic environment that means business. He stated that in the past "office layout was no concern" of the British developer. This is because historically "the office letting market has generally seen demand exceeding supply". Product standard has been geared to the convenience of the manufacturer rather than the consumer.

Salata (1982) promoted the "work station" concept within office buildings with each station requiring a sophisticated floor-ducting system, suitable lighting and the need to accommodate, if necessary divisible self-contained units. The air conditioning system, as well as the need for energy conservation, needs to be designed to meet this flexible use of the building.

Salata concludes that investment funds "that ignores the higher standards now required by tenants will inevitably find itself at a severe disadvantage on review or reversion". As will be discussed later, this view, whilst it may be correct, needs considerable amplification.

Whelan (1985) took up the themes of design suggesting that location was no longer the main factor in influencing tenant choice. The main conclusion was that although the City of London remained popular, tenants would be willing to move out if either the costs became too high or their existing property prevented them operating efficiently. Slow and inefficient lifts, unreliable air conditioning and awkward floor layouts all come in for criticism in the survey which was not confined to older buildings.

This survey, and its findings, anticipated the dramatic changes which took place in 1986/7 as a result of the "Big Bang" in the City of London which resulted in the market abolishing fixed commissions, the integration of brokers and jobbers' and the admittance of outside investors and capital to the Stock Exchange. The newly formed conglomerate companies became far less locational-conscious due to the advent of electronic screen based dealing and were prepared to consider City fringe locations if well designed buildings were available.

4.7 Office Design; The New Approach

At the same time those involved with property development and investment became more aware of building design and its influence on value, particularly through the changing tastes of tenants, architects have also become more aware of the internal aspects of building design. Becker (1988) summarised the phases of this realisation.

Becker correctly identified that consumer tests were regularly undertaken of other products yet rarely on buildings. Three phases of ORBIT building appraisal work have been undertaken to improve the "fit" between the product and the consumer.

The first phase was pioneered by architects DEGW and especially Duffy (1986) by linking design of office buildings to their ability to accommodate new information technology. This work was summarised by Duffy later (Healey & Baker 1986). He stressed that design was becoming more important due to new technology and the types of office workers implying an entirely new form of office environment. Duffy placed different office tenants on a two directional matrix with routine/non routine on one axis and low change/high change on the other.

Duffy took his analysis from types of occupiers to examine different buildings. In connection with his involvement with the Broadgate project at Liverpool Street in the City of London, he undertook a comparative study of "eleven contemporary buildings" using "Which" style presentation of his results. He was especially anxious in this City study to identify the size and shape of the largest "trading" floor in each building. From this the concept of net "lettable" space was distinguished from net "usable" space.

Inevitably the use of Computer Aided Design is influencing this type of appraisal and its application to new design. This led to the ORBIT 2 study in North America which aimed to develop a methodology to rate the suitability of different organisations to different buildings. A complicated scoring technique was developed to show where a particular building stood in relation to a hypothetical "ideal" building.

As Becker (1988) observes the ORBIT 2.1 rating process lead on from this with the aim of simplifying ORBIT 2. This has involved developing design strategies, trying to evaluate the effects of design under performance (where later changes disrupt an office) and over performance (where there is under-used capacity). The objective of ORBIT 2.1 has been to help order and extend the professional experience and judgement inevitably involved with the enormous complexities which arise when appraising an existing or potential building for a particular user.

4.8 "Intelligent" Building Design

The concept of information technology is very much behind the idea of a "smart" or "intelligent" building which is built to make the maximum use of technology for the benefit of both the landlord and tenant. It is an American idea which has been applied, as Thrasher and Danely (1987) noted in an article on the subject, to larger buildings where raised flooring with 12-16 watts per sq ft are essential. Fibre optic cables have become a popular facility in such structures and computerised HVAX (Air Conditioning).

It is the increase in the use of air conditioning which has led to the concept of "building sickness". This was summarised by Mira Bar-Hillel (1987) on the subject of buildings which generate illness based on a report by S Wilson and A Hedge of Building Use Studies which surveyed 4000 individuals in 46 buildings. It established that people feel worse in newer (normally air conditioned) buildings than in older offices. In many instances expensive air conditioning systems are poorly maintained by inexperienced staff which results in the systems not working properly. The problem is compounded by owners trying to "save" costs but not appreciating the resultant cost of building sickness and absentee rates.

Whilst recognising that intelligent buildings required intelligent maintenance, Loe (1987) tried to identify a clear definition of an "intelligent" building. One definition relates to intelligent fabric yet another is concerned with intelligent harmonisation of "electronic infrastructure, controls and communication/information process".

Loe examined 4 generations of office buildings and came up with the following cost allocation.

Trends in Percentage Capital Allocation to Building Components

Life Cycle (Years)	Component	1960	1970	1980	1990
2 - 3	Office Automation	5	5	11	17
5 - 7	Soft & Hard Fitting Out	2	3	13	11
15 - 20	Building Services	22	29	49	40
20 - 25	Building Fabric	41	33	14	17
40+	Building Structure	30	30	13	15
		100%	100%	100%	100%

It is noticeable that the percentage of cost allocated to the building structure has fallen from 30% to 15% over the last 30 years.

An intelligent building, Loe claimed, was one which integrated these five components and made them adaptable against each others life expectancy. The entire life cycle of design components had to balance time, cost and quality - a difficult task even with perfect intelligence!

There is no doubt that the concept of intelligent buildings is influencing architectural thinking which was the point made by Greenbury (1988). By way of example Greenbury explained how a Building Management System (BMS) designed into a building could save between 30% and 50% of the energy normally required to heat, light and ventilate a building. He stated nothing particularly new when he said "In this computer age anything becomes possible" and suggested "within 10 years no commercial building would be constructed without a BMS which would include a voice actuated computer system controlling the technology and holographic diffusion structures (HDS) enhancing daylight into buildings.

All these reviews "Intelligent" buildings concentrate on building design and the cost of these elements in relation to their life cycle. None take the financial implications of the market value seriously.

4.9 Office Design and Consumer Needs

Greenbury stated that technology should not take over like "Big Brother" implying that understanding office consumers/tenants was all important. Richard Ellis (1985) published "Suburban London Offices - the occupiers view" which was similar to the National Office Survey (Healey & Baker 1985) but primarily relating to M25 towns. The main objective was to find out why firms had moved, the criteria for funding new accommodation and the difficulties encountered.

126 firms were "contacted" and from the results design played an important part. It is known that Richard Ellis had access to the questionnaire used in the National Office Survey (Healey & Baker 1985) and it is therefore not totally surprising that some of the questions and presentation of the results was very similar! In discussing the order of importance when moving offices, the following were given as the factor important in the Selection Decision":-

Size of Premises

Location

Projection of Company's Image

Rent/Rates

Car Parking

Availability of Services

Layout of Space

Self-Contained Building

Staff Preference

Air-Conditioning

From the published data it would appear that the information was not disaggregated as intensively as the National Office Survey (discussed later in Chapter 7 onwards) but it did reveal that restructuring an organisation, upgrading accommodation and the need for larger premises, were the main reasons for decentralisation from central London.

One of the few other surveys on this subject was that published by Debenham, Tewson and Chinnocks (1988) "Office needs : the Occupiers View". This was based on 100 occupiers from key growth sectors of the market. It concentrated on the expectations of expansion, the needs for more staff, the growth of desk top technology and the influence of building design.

Once again the survey identified the lack of adaptability and flexibility of many buildings and the increasing awareness of building design to contribute to a company's efficiency. The survey identified the preference for "bespoke space" and said this was "increasing" although, as no earlier survey had been undertaken, such a claim may not be statistically sound. As with the papers on intelligent buildings, there has been no obvious attempt to relate these surveys on design to the financial implications in terms of market value.

4.10 The Investment Implications of Design and Age

A more statistically sound piece of work was undertaken by agents Jones Lang Wootton (1988)in a report entitled "Obsolescence: the financial impact on property performance". This paper aimed to "isolate the financial effect of ageing" so that investors could plan for obsolescence when calculating future returns on property assets.

Whilst papers produced by Richard Ellis (1988) and Debenham Tewson & Chinnocks (1988) had considered design albeit in relation to office needs in an overall sense without considering the investment implications, the Jones Lang Wootton (1988) paper examined some of the investment implications without examining design. Their paper simply stated:-

* "The fast changing requirements of occupiers has led to properties such as offices, industrial units and shopping centres, becoming outdated unexpectedly early".

* "The unprecedentedly large number of commercial buildings put up in the 1960s have all grown old simultaneously".

* "The high inflation rates of the 1970s masked many of the financial effects of ageing buildings. This changed in the 1980s as the pace of inflation slackened, and rents and value became steadier due to a falling demand for space".

The report recognised that Blandon and Ward (1978) were the first to take account of this problem and acknowledged that Bowie (1982) also had a major part to play in bringing the property markets attention to the problem.

The paper went on to show how the Rental Obsolescence Rate (ROR) could be measured using the difference between the Full Market Rent (FMR) and the Estimated Rental Value (ERV) of a particular property. This data was correlated against the age of the building in a similar way as that undertaken by the author of this thesis (see Chapter 9) without knowing of this research.

The Jones Lang Wootton (1988) paper suggested that the ROR was 2.7% per annum for offices using a log curve which "fitted the data better than either straight lines or other forms of curve". The implication was that all properties showed obsolescence and that old buildings lost value more slowly. The same exercise was carried out for years 1980 to 1985 and an average rate of 2.2% per annum was calculated. In some ways the results echoed the findings of Salway (1986) that obsolescence is faster in the earlier years of a building than in the latter.

What this research did not do is consider which elements of the building's design might lead to this rate of obsolescence, nor did it consider that different markets might show different rates of change. The City of London for instance is likely to have a different rate of obsolescence compared with the West End of London or provincial towns like Bristol and Birmingham.

From a statistical point of view less than 35 data points were chosen with 3 pieces of data at more than 22 years and the rest less than 15 years. There was a major gap in between these dates. The correlation co-efficient ranged from -.32 in the worst year to -.68 in the best year. This implies R squared from 0.102 up to only 0.46. Even in the best set of statistics this implies that more than 50% of the decline in value may have nothing to do with age!

The research paper published by Richard Ellis (1988) jointly with Hill Samuel Property Services on the subject of "Property Investment Depreciation and Obsolescence" addressed itself to the variety of types of obsolescence. This paper was partly based upon work undertaken by Baum (1988) (referred to later) and the City University.

The Richard Ellis paper suggested that building depreciation was not sufficiently allowed for in the market price which results in building obsolescence. For offices, obsolescence is more important than physical depreciation found in some industrial buildings. The report claimed refurbished buildings depreciated faster than unrefurbished buildings and that there was a difference between curable and incurable depreciation. The tenant, in a full repairing lease situation, is more responsible for the former and the lessor for the latter.

The reports aimed to clarify the difference between depreciation and obsolescence which is stated to be " one of the causes of depreciation and is defined as "the decline in utility of a building" not directly related to physical usage or the passage of time, while depreciation is defined as "the loss in the existing use value of the property investment".

Two market case studies were undertaken to test age and changes in value against depreciation. The Richard Ellis (1988) report produced "A Full Taxonomy of Depreciation in ERV" dividing depreciation into Tenure and Property Factors. Of this latter category, site and building depreciation were each identified and then, within the building depreciation sector, physical deterioration and separated from building obsolescence.

Between 1969 and 1986, the Richard Ellis research claimed to have examined 125 office buildings within the City of London. The loss in building value was measured against a hypothetical new building. Rental data was also collected on a similar basis and the effects of both tenure and site were "stripped away". Building qualities were appraised on a scale of 1 to 5 and correlation and regression analysis was used to measure the relationship between building qualities and depreciation in rental value and yields.

The findings showed that obsolescence of the building was more important than physical deterioration and that depreciation was faster between 8 and 25 years yet yields increased faster over years 7 to 12 for new buildings and from 11 to 16 years for refurbishments.

Of the three obsolescence factors internal specification and configuration were most important with layout most important followed by services being the most important sub-factor. The classification of a "sub-factor" was not explained in detail.

As the Richard Ellis (1988) report concludes; "flexibility reduces the risk of an irreversible and major reduction in the market value of a building" but a refurbishment area is less flexible and is therefore exposed to "more downside risk".

As with the work by Jones Lang Wootton (1988) referred to earlier, this analysis of depreciation did not take into account the cyclical effects of the market and whether there was a different perception of depreciation in a "bull" office tenant market or a "bear" office tenant market. It also failed to analyse sub-markets. Whilst this data primarily related to the City of London it did not state, let alone produce data to show that, other areas of the office property market behave very differently.

Although the report stated that "building flexibility is the most significant factor contributing to depreciation" it is far from clear from the published material how this conclusion was drawn from the research. There is no attempt to show statistically how the statement "the most significant" is arrived at. Once again the paper produced no guidance as to how an investor should take building obsolescence and depreciation into account when undertaking financial appraisal.

4.11 Depreciation and Property Investment Appraisal

In a conference paper (unpublished) entitled "Depreciation and Property Investment Appraisal" Baum (1988) looked at the interaction between depreciation and property valuation/investment appraisal models. He produced equations to show depreciation in relation to age and a separated equation in relation to the "configuration, internal specification, external specification and physical deterioration" which an (R squared) of 67.26% for the first and 84.1% for the second. Not only is it not clear how these 4 latter factors (configuration, internal specification, external specification and physical deterioration) were identified, it is not clear how the office tenants perception of each of these 4 factors in terms of their importance was translated into 4 co-efficients.

The paper states "Good design was found to reduce the impact of depreciation" although "good design" is never fully explained or statistically measured from market evidence.

From this work Baum (1988) developed an appraisal model which explicitly (rather than implicitly) input depreciation. This included inputting "a rate per cent depreciation per annum over each review and the estimated rental value per square foot at each review". But for this to work it is first necessary to "forecast percentage rates of growth in prime property rental values over the first, second and their review periods respectively".

At each review period an "average depreciation" is estimated and "estimated resale capitalization rate" is also included. On top of the current estimated rental value the estimated site value and target rate of return derived from 15 year conventional gilts, the model begins to look very heavy with assumptions! Baum does therefore suggest some form of probalistic model such as a simulation programme.

Although Baum (1988) suggests "accumulated depreciation may be disguised by the annual valuation" used to measure investment performance, he does not look at the interaction between the cyclical nature of the market, the sentiment of property investors and the influence these factors have on the intuition of the valuer. This type of study, together with a closer understanding of tenant perception of design, may be far more important than the Baum type analysis. Depreciation is already taken into account by the market as is clearly shown by the trend during the period 1981 to 1986 when office investment valuation yields moved up, sometimes dramatically from 6% to an all risks rack rented yield of 10%+. This was accounted for intuitively in the minds of valuers by the poor demand and over supply of office space but also the "depreciation" of existing buildings.

Although the papers by Jones Lang Wootton (1988), Richard Ellis (1988) and Baum (1988) were being put together concurrently with the work on this thesis, none have examined the office tenant market in detail and none have tried to analyse the information they did produce in relation to investment performance and the cyclical nature of the market.

Their main failing is not recognising that any property investment contains two elements; the land and the building. Only Baum (1988) has begun to examine valuation techniques in relation to obsolescence and depreciation but he has not identified the relative financial implications of valuing each element separately.

Chapter 5

THE HYPOTHESES STATED AND EXPLAINED

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5.0 The Introduction

The economic recession of the early 1980s reduced demand for office buildings and made investors aware of the problems associated with office property investment. In recent years there has been a growing awareness of the need to anticipate changes in the market and especially predict the cyclical behaviour of the market. This cyclical behaviour was referred to in Chapter 2. Although forecasting cyclical changes is not the purpose of this thesis, it is a necessary adjunct to developing a more rational approach to property investment appraisal.

The traditional rationale for property investment is to understand the forces of supply and demand in relation to a particular location. The investment decision is then largely dependent upon an appreciation of that location which conventional wisdom believes is the main contributor to future investment performance.

To some extent existing literature on office property investment and especially that relating to office building design, reflects the intuitive rather than rational approach to office property investment appraisal. Some writers, especially Bowie (1982), Sykes (1984), Salway (1986) and Baum (1988) have started to examine this conventional wisdom but none with the exception of Baum (1988) have backed up their analysis with research into office tenants which provides an understanding of these consumer's needs.

It is this lack of market knowledge which needs to be corrected and the information obtained then used as a tool for analysis which is a pre-requisite to developing investment appraisal. It is the need for information on the office market and the design of office building which provides the background to the hypotheses put forward in this thesis.

5.1 The First Hypothesis is that as a result of the market not being perfect in terms of the producers and investors in offices not understanding the consumers, the design of office buildings provided by the office market do not satisfy the needs of tenants. Certain areas of design such as the provision of car parking, cable trunking facilities and internal environmental control, are far less satisfactory than others. By undertaking a comprehensive survey of office tenants' views it will be possible to identify the areas of unsatisfactory design.

In times of recession, there is a "tenants' market"; those few tenants in the market are able to pick and choose between the surplus of office buildings available. The findings from this thesis will identify those areas of design that are more likely to attract tenants and hence attract a higher rent or create a higher capital value thereby identifying areas of building design which influence financial valuation consideration.

5.2 The Second Hypothesis is that different types of office user due to their different consumer needs require different types of design; a small private company will not have the same needs as a large international public company. One of the objectives of this thesis is to identify different aspects of design as they effect the different offices users and look at the office market by:

1. user type (headquarters, regional or administration buildings)
2. company type (professional services, financial services, computer electronic etc)
3. size of building
4. rental value per square foot
5. central business district versus out of town building
6. age of building.

5.3 The Third Hypothesis is that older buildings have a lower rental value in the office property market than newer buildings. At the outset of this research project, due to the paucity of data, no-one has published any material setting out research results showing the relationship between an actual market rental value and building age for building construction in the last 30 years.

The results of this analysis will then be compared with the findings to show that older buildings have a lower rental value because they have a poorer design.

5.4 The Fourth Hypothesis is that certain aspects of design have more effect than others on value. By examining two or three buildings it will be possible to understand the relationship between age, design and rental value. The objective is to inspect several buildings to establish how their design differs from modern buildings. The results of these studies will be related to the results which are generated from hypothesis one and two above and provide a basis for understanding the relationship between design and investment performance.

5.5 The Fifth Hypothesis is that it is possible to analyse the financial implications of building design; the office investment market needs to develop a different approach to investment appraisal. Debt financing, as opposed to long term equity investment, is already changing thinking in some areas of the market. So far however the cost of an office investment cannot be depreciated against rental income for taxation purposes although leasehold interests of less than 50 years may be offset against Income/Corporation Taxation and Plant and Machinery Allowances, as well as Industrial Building Allowances, are still available (at 100% in some Enterprise Zones until 1992).

Despite the lack of taxation - depreciation incentives, the thesis looks at the need for the office investment market to be regarded more as a trading asset, rather than as a long term real estate investment with a guaranteed rental income flow perpetuity as accepted by conventional valuation methods. The results of the tenant survey will indicate that the income is not necessarily guaranteed in perpetuity, as is perceived by many conventional wisdom in the present market.

An alternative method of investment appraisal is needed to take into account the finite life of building and its design. This thesis puts forward the Property Investment Design Appraisal Model as a new technique by which investors can undertake appraisal analysis and gain a better understanding of a property's investment worth.

Chapter 6

THE METHODOLOGY

Chapter 6

THE METHODOLOGY

6.0 Hypotheses Briefly Restated

I Tenants of office buildings in Great Britain due to the market being imperfect are dissatisfied with the design of the buildings they occupy.

II Different sectors within the office market require differently designed buildings; the level and nature of that dissatisfaction varies from one sector to another.

III Older office buildings have a lower rental value than newer buildings; a difference which can be quantified by collecting data relating poor design in older buildings, of less than 30 years old, to their lower rental value .

IV By examining several buildings in the office market in relation to the overall office investment market it is possible to identify areas of design which influence their rental value.

V It is possible to explicitly take design, as a factor, into account when undertaking the financial appraisal of an office investment.

6.1 An Examination of the Methods to Collect Data - An Overview

Before exploring the concept of research methodology and relating it specifically to this thesis, it is necessary briefly to explain the conventional wisdom surrounding the present method by which the property market "gathers information" about the market upon which decisions are made to show their inadequacy. These are often major investment/development decisions involving many tens of millions of pounds. It is because these "intuitive" based decisions produce poor investment returns that there is a need, in the author's opinion, for a more rigorous analytical method of assessing office investments, especially relating to design.

6.2 Anecdote

Within the property market the level of judgement used, to make decisions, often appears very subjective. Such phrases as "Gut Reaction" or "Rule of Thumb" or "Seat of the Pants" are commonly used. The attitude is very much that if a building is let and there appears to be strong demand from potential office tenants, then new development and investment in existing office buildings can be justified.

Often this judgement is further enhanced by those who have already "development/investment knowledge" of an area of the market and have a "feel" for the type of building which would command a high rent.

But the events following the slow-down in the British economy in 1980 and the eventual slow down in the performance of office investment have clearly shown that "across the lunch table" anecdotal decisions are not sufficient. A more structured method for collecting data and analysis is needed.

6.3 The Imperfect Market

The continuing problem with the anecdotal evidence suggested above is that there is a lack of marked knowledge about the market. Many market transactions are kept confidential for a wide variety of reasons. Even for those transactions which are known about, it is rare to know how or why the transaction took place. Exactly how the location, value, design or any number of other factors influenced the decision is not known.

An example of this problem is that the initial rent of an office building may or may not be publicly revealed. If revealed it is often just for a PR (Public Relations) purpose only and may not be the exact rent. A further complication is that the internal fitting out works may or may not be undertaken at the landlord/investors expense for which the tenants/lessee may or may not be paying rent. In other words the rent paid may not reflect a complete building let at the fullest market rents, particularly if a "prelet" was entered into, whereby the tenant agreed to take a lease before the development was commenced at the open market rent at the time. At the date of completion and/or occupation, the rent announced may be below the new current higher rental value for a similar designed building.

What is needed is much deeper methodical research into the market to gain a better understanding of how it works and how decisions are made. The following pages examine the methodology used in collecting data to develop such an understanding to test the hypothesis of this thesis.

6.4 Collecting Data : The Methodology

Knowing that the property market bases many decisions on anecdotal evidence and that the level of knowledge is relatively imperfect, the objective was to collect sufficient data which was reliable and meaningful to enable the hypothesis to be tested.

The main method used to collect data was by way of a questionnaire survey of office tenants. This "National Office Survey" will be justified and explained later. It was followed up with a further "National Office Design Survey".

The second method used to collect data was to obtain rental data from a sample of office buildings and relate this to their age. This also will be explained later.

The third method of collecting data was to investigate and inspect three office buildings constructed in recent years and analyse, in the light of the data collected in the surveys, why they had performed well or badly as investments.

Various statistical tests were employed relating to method one and two referred to above.

Before discussing methods of collecting data in greater depth it is necessary to distinguish between experimental and non-experimental research.

6.5 Experimental or Non-Experimental Research

Experimental or Scientific Research has the ability to control or manipulate the independent variables and observe the dependent variables. As with most areas of social investigation, understanding the behaviour of the office market cannot be undertaken using experimental research.

Non-Experimental Research cannot manipulate the "experiment". Research therefore is aimed at discovering, classifying and measuring factors behind a phenomenon - ideally by observing a controlled experiment but this is realistically not normally possible. This was the framework behind the methodology for this thesis.

In one sense Non-Experimental study is less trustworthy due to the lower level of control. The aim was therefore to avoid faults which lead to the wrong conclusions. By using various statistical tests (to be discussed) and by careful analysis meaningful results can be obtained.

As in every day life we have to depend on scientifically questionable evidence. Non-Experimental Research as used to test the hypothesis of this thesis therefore needed to answer the following questions:

I. Did the design of the research answer the research questions?

II. Did the design test the hypotheses?

III. Did the design adequately control the independent variables?

There are a number of ways of answering this set of questions. Where possible one should randomise the data, but if this is not possible the aim is to try and control the independent variables and unwanted sources of systematic variance such that they have a minimal opportunity to influence the results. In the case of collecting data on the office market, this objective is difficult to achieve, as will be discussed.

The design of any research is essentially a data discipline where it is necessary to conceptually structure relationships amongst the variables of the study. Although it is not necessary (or indeed possible) to choose random data, self-selection or structure selection of data may be necessary. The other key question may relate to the timing of the data collection. At different times in a week, month, year or over several years, the data collected may provide very different results. This is an aspect with which data on the office market is particularly susceptible, as will be explained later.

Non-Experimental Research is therefore a systematic, empirical enquiry in which the scientist (researcher) does not have direct control over the independent variables. Despite the lack of control it does not necessarily mean that the design of the research is poor or vice versa. As previously mentioned, by self-selection or sample based market data for instance it is possible to obtain reliable information. The problem then is to choose the correct sample - a problem I will return to in relation to the office market.

Non-Experimental Research is not therefore inferior to Experimental Research but has strengths and weaknesses. These weaknesses may be summarised as the inability to control the independent variables, the lack of randomisation of data and the risk of improper interpretation of the results. In particular there is a danger of believing there are "causal relations" between two variables which may not exist.

6.6 Methods of Collecting Data

There are a variety of ways of collecting data. Ideally a laboratory experiment is necessary but this cannot be achieved with non-experimental social behaviour. The second method is a field experiment examining the market over a period of time. Data in-flow can be extremely slow and not necessarily reliable. Such field studies aim to examine the relationship and interactions between different variables but this is not always easy, especially in the office market where data collection is both difficult and very expensive.

Survey research is a method by which one can study a large or small population by selecting and studying samples to discover incidents, distribution and inter-relations and thereby trying to draw some conclusions about the characteristics as a population as whole. This was the principle method used to test the first four hypothesis of this thesis.

6.6.1 Telephone Surveys

One method to collect such a sample of data is a telephone survey which, although fairly quick and low cost may produce shallow answers. It is difficult to ask detailed questions over a telephone and indulge in lengthy conversations. Not only can such interviews last 10-15 minutes only, specialised skills are needed to obtain reliable answers from interviewees.

6.6.2 Mailed Questionnaires

A second method is a mailed questionnaire. The writer has personally been involved in a number of such questionnaires which have produced very varied results. One such questionnaire involved finding out from 30 or 40 local authorities what they thought about the public ownership of land. Out of nearly 40 questionnaires sent out only 4 or 5 were returned successfully. Some were returned with abusive comments! A 10% return rate is quite common but, as with the telephone survey, detailed questions cannot be asked. This method was used in the follow up "National Office Design Survey" as will be discussed.

In a second experiment with a mailed questionnaire 1,500 occupiers of office buildings in the centre of London were sent postal questionnaires by the writer yet only about 100 returned. Although this gave a reasonable sample, it again proved the point which is generally noted from this type of work that, one often receives 10% or less of a sample by return.

In a third such experiment, the writer was involved in a shopping questionnaire where 600 shopping questionnaires were distributed in 3 shopping streets in Central London. On this occasion some 35% of the questionnaires were posted back providing a very useful sample of data about shopping habits.

The three cases of postal questionnaires with which the writer has been involved are outside the scope of this thesis but illustrate the limitations of this type of data collection.

However successful a mail/postal questionnaire is, there is always the problem that those who return the questionnaires may in themselves bias the results. One can follow up these questionnaires by asking the participant more detailed questions but this can be expensive and also not particularly reliable.

6.6.3 Panel Interviews

A third method of collecting data is by panel interview. With fast moving consumer goods this has become very successful as a way of examining in depth certain key issues about consumers attitudes. It is estimated that it costs in the region of £1,000 per interview session but considerable skills need to be developed before such sessions are fruitful in terms of producing useful data. This method produces qualitative rather than quantitive results which can be analysed statistically.

6.6.4 Face to Face Interviews

A fourth method is that of the personalised face-to-face interview. This has the advantage that a schedule of questions can be put together collecting both fact and opinion. Generally speaking such methods yield good information which is reliable. This was the method employed to collect data for this thesis.

Collecting data via this method has a number of advantages. A great deal of data can be collected relatively inexpensively, in terms of data collection it is good value for money and the personnel involved find it interesting undertaking the interviews. The data generally speaking is relatively accurate.

There are however also disadvantages which have to be realised. It is sometimes difficult to use penetrating questions (unlike the panel interview method) and answers to complex questions may not be obtained. Despite the "value for money" argument put above, it is still expensive. In the case of the National Office Survey (to be discussed later) it costs in the region of £20,000 to collect this data excluding the hours analysing the sample. A further disadvantage is that the schedule of questions must relate to the data which needs to be collected and, as will be seen later, some of the data collected was in doubt due to the difficulty in framing questions to elicit the appropriate information.

A further point that must be considered is the skills necessary by the interviewer. Whilst a well structured questionnaire may eliminate the worst areas, it is still possible that the interviewer may create a bias in the results by the way he or she asks certain questions. One way round this is to have a wide variety of interviewers such that the errors are randomised and they do not distort the eventual statistics.

By undertaking an interview questionnaire it is possible to produce data relating to numerical information (such as an area of a building or distance from another building), rank certain priorities, generate percentages, collect monetary information and, as previously mentioned, produce schedules of both factual data and opinions from the questionnaire.

6.7 Structuring the Interview

The interview is regarded as the most ubiquitous method of obtaining information from people. Although it is direct and has strengths and disadvantages as previously described, the shape of the questionnaire may be the key to obtaining the best information.

The interview on a face-to-face basis may produce a very good response but the very structure of the questions may produce different types of results. A structured question is where there is a fixed word or numerical answer to the question asked. This may produce hard facts but not necessarily reliable information.

An un-structured one is an open-ended question where the interviewee can elaborate. This may overcome ambiguity of questions, lack of sharp focus on issues and override bad interview technique.

The three types of question which may be asked are fixed alternatives such as "yes/no/don't know" or alternatively "good/satisfactory/poor". Secondly, the open-ended question may ask "what do you think ...?" A third type of question is a scale item where the interviewee is asked to rank in order of preference four or more items. All these types of questions were used with the National Office Survey, as will be explained.

6.8 Non Parametric Analysis and Interview Sample

As will be explained later, the sample of interviews obtained was neither larger nor necessarily representative of office statistical "population". For this reason non-parametric analysis can be helpful.

Non parametric techniques of hypothesis testing are uniquely suited to data of the behavioural sciences for a number of reasons:-

a. The data is "distributed free" in that one does not assume a certain population distribution and test the sample against the population.

b. It is useful for simple rank analysis as used with the National Office Survey.

c. It is relatively easy to undertake mathematical analysis and the nature of the data is more relevant than the mathematics.

d. It is useful where there is a small sample due to the nature of the data. In the case of the National Office Survey a relatively large sample was obtained, but it is impossible to judge where it is truly representative of the total stock (population) of office buildings.

e. Non parametric analysis enables conclusions to be reached regardless of the shape of the population.

6.9 Chronology of Events

To assist the reader in understanding the methodology herein described it may be helpful to understand the chronology of events concerning the National Office Survey and the National Office Design Survey. These were followed by other research as described below.

1. The draft framework of the questionnaire was put together based on the authors day to day knowledge of the UK office market and literature on the subject, very little of which had been written in 1984.

2. Draft structure discussed with Dr M Levis at University of Bath and then turned into a draft questionnaire which was circulated to the office partners and several investment partners at Healey & Baker who had detailed first-hand knowledge of the office market over a number of years. The comments, not all of which were relevant to this thesis (as explained later), were included in the questionnaire.

3. The writer and several other interviewers experimented on 15 tenants both in London and South-East England. This "pilot survey" is later referred to. The pilot interviewees were chosen largely based on cost/time constraints of the writer.

The aim was to concentrate on useful questions, reword confusing questions and group questions together in a more meaningful (logical) sequence.

4. The interviewers were approached in 23 Polytechnics and Universities across Great Britain and asked to undertake the interviews.

5. The results of the National Office Survey were analysed, (to be discussed) and several papers published summarizing the results.

6. A further postal questionnaire was sent to all the original interviewees.

7. The results of the postal National Office Design Survey were analysed (as discussed later).

8. The writer obtained office rental and age of construction data, first relating to Guildford and later relating to the UK for analysis.

9. The writer visited the three buildings which were analysed in greater detail and cross checked against the results of the earlier surveys.

6.10 The Structure of the Questionnaire

As the survey was being sponsored by Healey & Baker it was necessary for the results to cover a wide spectrum beyond the intentions of this thesis. There were essentially 5 areas which were covered:

Part One : Basic Data Relating to the Interviewee

Part Two : Questions Relating to Location

Part Three : Questions Relating to Design

Part Four : Questions Relating to Financial Data and Lease Terms

Part Five : Questions Relating to Interviewees Planning the Move

The questionnaire is included as an appendix to this thesis.

6.11 Part One - Basic Data

The first section dealt with hard data relating to the interviewers, the interviewees, the address of the property, the type of tenant and the nature of the premises (see Questionnaire in Appendix). The location of the building in relation to communication and other facilities was established.

Question 1.5 established whether the building was within a recognised Central Business District, Question 1.6 whether the tenant had his own front door and Question 1.7 whether the building was multi-let.

These three questions are examples of information which was later used to sort the data and obtain different results according to the sort of parameters chosen. The data was put on to a computer programme called "Micro Soft File" using an Apple Macintosh micro computer. This enabled certain statistical calculations to be undertaken simultaneously with sorting the data into various subsets.

6.12 Part Two - Location

This section was devoted to understanding firstly, why the tenant left the original building and secondly, why this particular new building was chosen.

It also tried to establish at what level the decision was made to move to a new location. Was it a board decision or branch or property manager who decided?

Many of the questions in this section of the questionnaire are not directly related to the subject of this thesis but, as the survey was being undertaken at the expense of the partnership of Healey & Baker, it was necessary to include questions which would be meaningful to the scope of their involvement with the property market.

6.13 Part Three - Design

This was the most important section in terms of this thesis. The background to this set of questions was to test the first four hypotheses of the thesis. These hypotheses were based on the concept that obsolescence in office buildings, which became very noticeable in the early 1980s, could be divided into its cost-in-use, the functional abilities of the building and its aesthetic value as discussed in Chapter 4, The Literature Review Section 4:3 with reference to McIntosh (1984).

The first objective was to divide the design into 4 main categories. Question 3.1 therefore asked tenants to rank in order of importance:

a. the structure/shape/flexibility of the building
b. the car parking facilities
c. the external appearance/visual image of the building
d. the internal services/amenities.

These 4 questions then formed the structure of the whole of the questionnaire within Part III.

Question 3.2 related to questions concerning the structure such as the floor loading, location of the columns, net lettable area which was "usable" and the "ideal" wall to wall width.

At the end of this question, as with all main questions within Part III, the interviewee was asked to say whether the subject of this question (in the case of Q 3.2 it was the structure/shape of floor) was "good/satisfactory/poor".

This was followed by an openended question asking how the design could have been better. In other words the questionnaire was deliberately designed to collect both hard results which could be tested statistically but also obtain opinions (soft information to aid analysis).

Question 3.3 related to the car parking, initially collecting hard data in relation to the number and location of the spaces.

The latter part of the question asked whether the car parking was "good/satisfactory/poor" in relation to the a. management and b. staff. This is an example of a refinement put into the questionnaire during the pilot survey stage. The original question simply asked about car parking but one pilot interviewee pointed out that at his building car parking for management was sufficient but not for other employees, hence the later amending of the questionnaire.

Question 3.4 related to a series of questions on the external appearance /visual image. With the exception of the "good/satisfactory/poor" questions, the "yes/no" format was used to establish clear answers and hard data to be later analysed statistically.

Question 3.5 on internal services /amenities was designed to reveal a lot of information about the tenants attitudes to the area of building design which has received more anecdotal criticism in recent years. The formal of "good/satisfactory/poor" was applied to a wide range of internal design areas. The two areas of air conditioning and floor trunking facilities were identified for further questioning to test the extent of the apparent discontent with these areas of design and to produce hard data for statistical analysis at a later date.

Although Question 3.4 related to the external appearance (in other words the aesthetic appearance of the building) most of the questions in this section related to the functional aspects of design.

6.14 Part Four - Rental Payment/Lease Terms

The pilot questionnaires, as previously explained, helped sort out the format of the questionnaire. It had the most impact on this section of the questionnaire and resulted in all the data to be collected relating to financial aspects being put on one page.

Several partners at Healey & Baker had previously given advice on the format of the questionnaire generally and this was the page which interested them most. The objective was to find out about the cost-in-use aspect of the building.

As shall be discussed when analysing the results, it was the most difficult page of the questionnaire upon which to collect data. Most tenants simply had no idea how much their building cost to occupy.

Only a very few claimed they had data but it was not readily available.

In a separate exercise, outside the scope of this thesis, the writer has tried to obtain cost of occupation data on the London Office market and once again came up with this same problem. Many tenants do not know how much it costs to occupy a building partly because different costs are paid by different departments within a company. The rent, the repair bills, the cleaning bills, the heating and lighting bills will all, on some occasions, be paid for by different individuals. The problem is compounded by the fact that some of the costs are paid out of the revenue account and some out of the capital account for which an annual sum is not calculated. Even if all the costs were known, there is no clear method of decapitalising capital costs to arrive at a satisfactory annual cost of occupation.

6.15 Part Five - Planning the Move

This part of the questionnaire was largely designed to collect information to help Healey & Baker improve its own business. It was aimed at finding out how office tenants perceive chartered surveyors and how they could improve their service to clients. Such questions are outside the main scope of this thesis.

At the start ~~however~~ of the section was a question which asked interviewees to rank, in order of importance, their building when deciding to rent the accommodation, in relation to:

a. its location with Great Britain

b. its location with a town

c. the design of the building

d. the cost of rent/maintenance/rates and finally

e. the lease terms.

The objective of this question was to try and put the concept of design within an overall context as far as tenants decision making was concerned. Most of the other questions in this part of the questionnaire were not relevant to the purpose of this thesis.

6.16 The National Office Design Survey

The results produced by the National Office Survey in 1985 needed further clarification in a few areas especially relating to design. For instance the survey appeared to indicate that the kitchen/catering facilities were both important to office tenants and inadequate in many buildings. This issue needs further clarification because it did not seem to accord with anecdotal evidence from the office market.

With reference to car parking the survey reveals that 80% of office buildings did not have good car parking for the office staff. Yet when tenants were asked to rank car parking in order of importance (see Question 3.1), the buildings structure/shape, its internal amenities and its external appearance were all regarded as more important. Once again this did not seem to accord with Healey &

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Bakers experience of why tenants preferred certain office buildings to others. Conventional wisdom suggested that car parking was far more important than this first survey seemed to show.

It was therefore decided to undertake a follow-up survey to clarify certain issues which will be explained. The follow-up survey was designed to check the validity of the earlier data produced using the postal questionnaire method of collecting data.

6.17 The Postal Questionnaire

Resources did not permit another round of face-to-face questionnaires. This was regarded as less important because the names and addresses of the original participants of the earlier survey were known (the original sample will be explained later).

A simple one page questionnaire (to be discussed later) concentrating on aspects of design was devised and posted in 1986 to more than 200 individuals who had taken part in the 1985 survey. As has been explained (see section 6.7 of this thesis) there are limits to the type of accuracy of data which can be collected using this method. The normal limitation is that postal questionnaires often result in a very poor response, sometimes as low as 10% being returned.

The key issues with this type of data collection are:

a. to keep the questionnaire very simple in its format

b. make sure the questions are straightforward, and

c. target the questionnaire at named individuals.

These key issues all applied to the 1986 follow-up survey. Of more than 200 questionnaires sent out, 77 were returned in a pre-paid envelope, a response rate of 38%. This produced a large enough sample of data which was statistically meaningful although disaggregation of such a small sample had to be treated carefully.

The regional distribution of returned questionnaires was as follows:

City	1
Greater London	11
South East	23
South West	8
East Anglia	3
West Midlands	2
East Midlands	2
North West	7
North	6
Yorkshire & Humberside	3
Wales	3
Scotland	8
Great Britain	77

35 of the returns came from London or the South East; more than 50% of the sample. This is similar to and did not deviate from the distribution of the original 1985 survey, reflecting the larger number of salaried jobs and office employees in South East England.

This table clearly reveals that to undertake statistical analysis of one particular region would produce statistically meaningless results due to the small size of the sample received from most regions.

6.18 The Questionnaire Structure

The first part of the postal questionnaire related to "hard" data such as location and size of building. By coding each questionnaire before they were sent out, it was possible to relate the responses of this survey to the original questionnaires completed with the earlier survey in 1985.

One of the questions asked the tenants:- "If more money had been spent on the construction of your building, which of the following would have merited more expenditure?". The tenants were invited to rank those categories of expenditure which should have received more expenditure.

The tenants were asked to rank 11 aspects of building design in order of importance. (See Postal Questionnaire - which is an appendix to this thesis). This question produced results which clarified some of the results relating to design from the earlier survey in 1985.

At a later date in 1987 the writer was speaking at the Welsh School of Architecture, Cardiff to the final year graduate architecture students. They were also asked to rank, in order of importance, 11 areas of office design. The objective of this exercise was again to test Hypothesis I. If office tenants were dissatisfied with the design of office buildings, perhaps it was because those responsible for design placed a different importance on the 11 areas of design questioned by the National Office Design Survey.

6.19 The Statistical Tests Used

The type of statistics generated by the survey depended on the type of question asked. To test the first four hypotheses, whilst all the results were analysed and are discussed later, greatest emphasis was placed on the data relating to office tenants perceptions of the internal amenities of their building.

The most common method of collecting data was by using percentages, in some cases this was because the question asked for a percentage. An example is Question 3.2 (d) which asks the tenant to estimate the percentage of net usable floor area within the net lettable area.

For a number of other questions percentages were generated from the results. For instance, interviewees were asked; "do the supporting columns allow flexibility or do your premises have room for expansion or is your building multi-tenanted?"

Many of the questions asked for a qualitative answer. The format used by "good/satisfactory/poor" when the tenant was asked to rate an area of design. It was these questions, as will be explained, which were subjected to statistical analysis to ascertain their statistical significance.

Some of the results were purely numeric such as, how many car spaces do you have and, how many employees work in the building.

6.20 Ranking Analysis

Apart from the internal design, which will be discussed later, the other area of statistical analysis was on the questions asking tenants to rank 4 or 5 areas, in order of importance. Question 3.1 asked for a ranking assessment of the structure, car parking, external appearance and the internal services. A similar question also occurs at Question 5.1 although this is less concerned with the location, design, cost and lease terms.

The first analysis concerning Question 3.1 and 5.1 related to the weighting to be placed on the results. It was thought possible that, although one of the 4 items might be ranked first, it could be far more or only slightly more important than the other 3 items.

The first results gave the 4 items equal weights. The second test, instead of weighting the 1, 2, 3 and 4 weighted them 1, 2, 4 and 8. A third test, instead of simply doubling the weight score, squared each weight score and used weighting 2, 4, 16 and 256. A final test tried to see if, by weighting the second and their choice, the result changed. Weighting of 1, 2, 2 and 4 were used for this test.

In each case, the scores by their proportional representations were multiplied by their chosen weighting to produce average scores which, when totalled, were used to rank in order of importance, with the lowest score representing the most important and the highest score the least important.

6.21 Ranking Co-Efficients

A number of tests have been devised to compare the rankings of one set of data with another set. Examination results for a set of students with ranking data for different sets, is one example. The Spearman and Kendal rank correlation co-efficients relate to these types of tests. They aim to test the degree of relationship between two or more sets of rankings. Such analysis was not relevant to the data produced by the National Office Survey.

However, Kendall's co-efficient of concordance : W, measures the relationship amongst a number of ranks of N objects given by this formula:

$$W = \frac{Rj - \frac{Rj}{N}}{\frac{1}{12} K (N3 - N)}$$

Where:-

W = Kendall co-efficient of concordance

Rj = Sum of the ranks assigned to each entity

N = Number of entities

$\frac{1}{12} K (N3 - N)$ = Maximum possible sum of squared deviations (the sums which would occur with perfect agreement among K rankings)

W therefore expresses the degree of agreement among interviewees in ranking the various entities. The higher the value of W means the interviewees are applying essentially the same standard in ranking N entities. It does not however mean that the ranking is correct but that interviewees are behaving in a similar way . This test was applied to Questions 3.1 and 5.1 and was considered a pre-requisite to testing the first four hypotheses.

The rank order was further analysed using the standard deviation. The objective was to analyse the variance around the mean value for each ranked result. Such analysis identified the degree of certainty placed on each ranked result. One of the purposes of this analysis was to analyse the regional differences in assessing the order of priority which tenants placed on different aspects of design which particularly related to Hypothesis II.

The problem, as will be discussed later, is that certain regions produced a sample size which was statistically unreliably small for any meaningful interpretation to be placed on the results of these tests. However, such analysis does enable a clearer picture of the relative importance of the four factors being ranked to be interpreted with a greater level of understanding.

6.22 Principal Design Statistical Analysis

As previously explained, Part Three of the questionnaire was divided up into four areas of design; the structure, the car parking, the internal amenities and the external appearance.

At the end of each section of the questionnaire dealing with these four areas of design the interviewee was asked to state whether this aspect of design was good, satisfactory or poor.

Using the national results to test Hypothesis I, this data was further statistically analysed using the chi-squared test. This is the X distribution often used in statistical analysis and enables the significance of the departure of observed data from that which would be expected. It is based on the formula:-

$$X = \frac{(O - E)^2}{E}$$

Where:-

X = Chi-square test

0 = The observed occurrence

E = The expected occurrence

X is significant by reference to statistical table. The test used for this analysis at one degree of (variance) freedom (n = 5) with 95% level of confidence (= 0.95). The statistical test is that if X is greater than a co-efficient of 1.145, the result is statistically significant and it can be concluded that tenants are dissatisfied with the building design.

As previously explained, one of the objectives of the thesis in testing Hypothesis II was to identify how different sectors of the market perceived the internal design of the building they occupied.

For this reason the results from Question 3.5 of the questionnaire were analysed for each sub-sector of the market and then compared with the results for Great Britain as a whole.

The test used to analyse these sub-sector results was the chi-squared test. The null hypothesis was that, if the results for the sub sector were similar to the national results, there would not be a statistical significance. In other words, were the perceptions of tenants for instance in Non-Central Business Districts offices different from the national results, or were the perceptions of tenant's older office buildings (ie: pre 1970) different from the national results?

The sub-sectors analysed were as follows:-

Central Business District/Non CBD

Size - (less than 5,000 sq ft, 5-20,000 sq ft, 20,000 sq ft+)

Rental Value - (-£10 per sq ft, £10-15 per sq ft, £15-20 per sq ft and +£20 per sq ft)

Sector - (Computer/Electronic, Financial, Manufacture, Professional Services)

Use - (Headquarters, Administration, Regional/Branch)

Age - (-1970, 1970-1980, + 1980)

6.23 Rental Value and Age

One of the pieces of analysis undertaken from the data produced by the National Office Survey related to the influence of age on the tenants' perception of the design of their internal amenities. In other words, did those tenants in older buildings regard the building design as less adequate than those in newer buildings? To test Hypothesis III further, an attempt was made to correlate the rental value of a sample of buildings with their age. At the time of collecting that data, no known research had ever been undertaken into the relationship between age and value.

Whilst initially it had been known that buildings "appeared" to lose value with age, no market data had been assembled to analyse this relationship. The exception to this was the work, previously mentioned undertaken by Salway (1986) which considered the concept of market perceptions with building age but did not consider the age from an actual market data point of view.

6.24 Guildford Rental/Age Data

The first set of data on the subject of rental value and building age related to the office market in Guildford between 1986 and 1987. As always, the problem with the property market is to collect data of any sort and in so doing, collecting accurate data can be even more difficult. With the help of a contact at the District Valuers office (part of the Inland Revenue) the writer was able to identify the first letting dates of a number of buildings. These were the dates upon which rates first became payable and it was assumed that these dates reflected the age of the building. As this assumption cannot always be relied upon, interpreting the results of this analysis must be undertaken with caution.

This data was charted against the rental value as a percentage of the best rental value being obtained in the Guildford office market at that period of time. The graph, correlation and R squared co-efficient show the relationship between market rental value and building age and was used to test Hypothesis IV.

6.25 National Rental/Age Data

The second method of analysis, showing the relationship between office market rental value and the age of the building, related to examining a large number of investment portfolios with which Healey & Baker and the writer was involved. As a way to test Hypothesis III the objective was to obtain the estimated rental value of a building in 1987 and compare it with the best (prime) rent in the market to provide a figure to show rental values as a percentage of the prime rent being obtained in a particular market at that time.

By charting these graphically against age it was possible to create a correlation and explanation co-efficient showing the relationship between rental value and building age. The difference between this data and that for Guildford was that the Guildford rental information related to actual rents agreed in market lettings during 1987 whilst this national data related to estimated rental values placed on a sample of office buildings by a number of valuers undertaking portfolios valuations for a number of investment clients.

To test Hypothesis III, using both the Guildford data and the Healey & Baker data it was necessary to blend the results with those relating to design and age of building obtained from the questionnaire survey.

6.26 Identifying the Interviewers

The major problem with the interview technique, as previously discussed, is contacting the right interviewers, particularly taking into account the resources including finance of the writer. The writer sought, and obtained, the co-operation of some 23 Universities and Polytechnics throughout Great Britain where subjects allied to Land Management are taught.

In most cases the interviews were undertaken by lecturing staff but even with such a reliable team of interviewers it is not possible to be 100% certain that errors did not occur in the way interviewers consciously or sub-consciously completed the questionnaires. However with more than 30 interviewers being involved throughout Great Britain the chances of a significant distortion of the eventual statistics was considered to be remote.

The instructions were to obtain a minimum of six and in some cases more than twelve interviews with tenants of office buildings.

6.27 Identifying Interviewees - How the Sample was Chosen

The interviewers were asked to identify office buildings where a tenant had recently taken up occupation. Recent was defined as within 2 - 3 years of the date of the interview. The reason for this request was to make the data as relevant as possible to the state of the market at the time the information was being collected. Also, by interviewing such tenants, it was hoped that the reasoning behind the decision making process when taking the office accommodation would be relatively fresh in the minds of the interviewees.

The interviewers were also asked to identify a cross section of office buildings in terms of age and size in the towns they were asked to survey. In other words, the sampling had to be left very much to the interviewer due to the limitations of market knowledge and resources. The concept of undertaking a random sample was impossible to achieve as there is no known statistical "population" of office buildings from which random selection could take place or a "structured" sample could be evolved.

To a limited extent the concept of a "structured" sample was attempted by interviewers but, as the total population was and still is not known, it was impossible for interviewers to structure a sample which reflected the total market. In any one location there is obviously a limit to how many recently let office buildings could be visited. The reason for using recently let buildings in addition to the above was two-fold:

i. The problem in some areas of the office property market is that a building may be let due to the extreme shortage of other available buildings at any one moment in time.

ii. At other locations the reverse may apply. In this latter situation, a building's design may influence its letting and it was this issue which the survey hoped to identify.

Interviewers, having identified the most likely office buildings suitable for the survey, were then asked to try and obtain an interview with someone who had been involved, preferably at board level or in a similar senior position, with the process of deciding to take new office accommodation. This proved to be difficult on some occasions as senior level staff were not prepared to be interviewed.

One technique used to obtain an interview was to write a letter in advance and then telephone for an actual appointment. On other occasions the interviewers telephoned persistently until granted an interview.

These problems highlight the difficulties of obtaining data within the property market. Some tenants were suspicious of the motive for such an interview and another firm of surveyors thought that the writers' employees (Healey & Baker) were trying to "steal" clients for future rent review and agency instructions.

Unlike the market for consumer goods and services, pioneered by the Consumer Association, there has been very little if any (to the writers knowledge) consistent collection of data in a rational methodical way on the office market on similar lines to that used by this National Office Survey.

6.28 Sample Size, Make-Up and Limitations

The sample size is important in understanding the significance of the results. The survey was limited in terms of financial resources which would normally be outside the capabilities of one individual writing a Ph.D thesis. Due to the involvement with Healey & Baker, a payment of £25 plus travelling expenses was paid for each completed questionnaire. 23 Polytechnics and Universities agreed to assist with the interviews. To some extent the location of these academic institutions influenced the make-up of the eventual data, as will be discussed.

The survey resulted in more than 200 questionnaires being completed. The important factor as has been observed in Jain, Pinson & Ratchford (1982) who say:-

"Other areas of social science is not the size of the population research data but the precision and confidence desired of the estimate, the sensitivity of the decisions to the estimates made from the data, which is important. The crucial question with sampling, as with every other phase of a research plan, is whether it will yield useful results for the decision maker".

One of the issues was to identify the problem of reliability and bias. In other words, is the sample indicative of the market as a whole and would the results be similar if the survey were undertaken with a different sample.

The reliability of the results is essentially a measure of the magnitude of the difference amongst the various possible sample results. Theoretically the National Office Survey should be repeated with a number of samples but clearly this is not possible with the time, money and resources at the disposal of the writer.

This is a common problem as previously discussed with all non-experimental research but by testing the data for its statistical significance which will be discussed later, reliable interpretation can be placed on the results.

A sample size of 30 results is a minimum yard stick by which results are normally judged statistically significant. To double the statistical accuracy of results the sample size would have to be increased by 30 to the power of 30.

Whilst the sample size of around 200 completed questionnaires may be small in relation to the total office market, it does provide a statistically satisfactory sample of results from which some reliable findings can be deduced.

Table 6.28 entitled "National Office Survey : Sample Mix" illustrates the nature of the sample eventually achieved. Taking as a critical number 30 interviews, means that any disaggregated sample of less than around 13% of 212 interviews is likely to produce a statistically unreliable result. The disaggregation of the data will be referred to throughout the analysis of results of the survey.

What is far more fundamental to the reliability of the results is the nature of the questions asked, and how well both the interviewer and the interviewees understood what was requested of them. In other words, the structure of the questionnaire, the questions themselves and the analysis of the results is important to the findings of the survey.

Analysing the sample mix, the sample was biased towards South East England as that is where most office development has taken place over the last two decades. But there is no way of judging whether the subsectors as represented in Table 6.28 accurately reflects the total office "population" of Great Britain. What can be surmised is that, assuming the interviewers followed their instructions and interviewed tenants in recently let buildings, the sample split reflects the office letting which took place in the 2-3 years prior to the date of the survey, 1985.

Table 6.28

National Office Survey : Sample Mix By Percentage

SIZE	
0 - 5,000 sq ft	36%
5 - 20,000 sq ft	28%
20,000 sq ft plus	36%
BUSINESSES	
Computer/Electronic	13%
Financial Services	30%
Manufacturing	4%
Professional Services	23%
Others (Government etc Leisure)	30%
RENT	
Under £10 per sq ft	71%
£10 - £15 per sq ft	9%
£15 - £20 per sq ft	7%
£20 + per sq ft	3%
AGE	
Pre 1970	13%
1970 - 1980	25%
1980 - 1985	62%
LOCATION	
Central Business District	69%
Non Central Business District	31%
PREMISES	
Headquarters	50%
Branch/Regional	42%
Administration	8%
REGIONS - (DOTI. Economic)	
City of London	4%
Greater London	17%
South East (outside Central London)	27%
South West	8%
East Anglia	3%
West Midlands	4%
East Midlands	3%
North West	9%
North	6%
Yorkshire & Humberside	4%
Wales	6%
Scotland	12%
Total Number Questionnaires	212

Chapter 7

THE RESULTS FOR GREAT BRITAIN

Chapter 7

RESULTS FOR GREAT BRITAIN

7.0

Hypothesis I briefly restated suggests that the tenants of office buildings in Great Britain are dissatisfied with the design of the buildings they occupy.

This chapter examines the results for Great Britain as a whole with reference to Hypothesis I. Whilst reference will also necessarily be made to the disaggregation of this data, the most important disaggregation in relation to design and Hypothesis II takes place in Chapter 8.

7.1

The results relating to the design questions were tested for their statistical significance, whilst many of the other results in the next few pages are presented and only briefly discussed without the aid of statistical analysis which was not necessary to test Hypothesis I.

In the chapter which follows, the sub-markets are examined in relation to the internal design of office buildings as a method to test Hypothesis II. Before examining the national results in relation to design, it is useful to briefly examine how the same interviewees responded to questions relating to location.

7.2 Location Analysis

The first part of the questionnaire was concerned with the reasons why tenants:-

a. left their original premises

b. moved to the new location

It was found from the survey that tenants moved from their original premises on average 10.25 miles although, as with many of the questions, there were variations; on average Headquarter tenants moved 12 miles, Branch/Regional offices 5.8 miles and Administration/Back Room offices 20.3 miles.

Although the results, for the manufacturing and administration sectors are included, the sample size was so small the results are statistically unreliable. Under Type of Business the remaining 30% related to buildings which did not fall into the 4 main uses.

Table 7.2.1 sets out the results in relation to the reason for leaving the previous office location.

Table 7.2.1 (Question 2.2)
REASONS FOR LEAVING PREVIOUS OFFICE BUILDING LOCATION

		PREMISES			TYPE OF BUSINESS			
		8%	42%	50%	13%	30%	4%	23%
	G.B. 100%	A	B/R	H	C/E	F	M	PS
Expansion	71%	82%	74%	67%	82%	74%	45%	74%
Contraction	2%	6%	1%	2%	4%	2%	9%	0%
Changing Nature of Business	12%	18%	11%	12%	25%	14%	18%	8%
Diversification	7%	18%	8%	5%	7%	6%	9%	8%
Rationalisation	21%	6%	22%	20%	14%	23%	27%	16%
Merger	8%	0%	9%	7%	0%	17%	0%	2%
Cost of Accommodation	16%	18%	8%	21%	4%	25%	18%	12%
Lease Expiry	13%	18%	13%	12%	18%	8%	18%	20%
Rent Review	3%	0%	0%	6%	4%	3%	9%	2%
Building Obsolescence	18%	12%	19%	19%	36%	20%	18%	20%
Changing Office Technology	16%	18%	18%	15%	25%	18%	18%	14%
Staff Requirement	15%	12%	18%	13%	21%	17%	9%	14%
Image of Organisation	31%	6%	39%	29%	46%	25%	45%	42%
Working Environment	24%	12%	20%	22%	25%	25%	36%	32%
Car Parking	12%	6%	11%	14%	14%	12%	0%	16%
Shopping Facilities	2%	0%	1%	3%	0%	3%	9%	0%

Where: A = Administration Office
B/R = Branch/Regional Office
H = Headquarters
C/E = Computer/Electronic Companies
F = Financial Companies
M = Manufacturing Companies
PS = Professional Services

Table 7.2.1 sets out in percentages the reasons given for leaving the buildings they previously occupied.

Whilst expansion (71%) is the most important reason given for leaving an existing building, from the above the Image of Organisation (31%) and Working Environment (24%) were more important than many of the other factors. Such factors as Lease Expiry (13%) and Rent Reviews (3%) were far less influential despite conventional wisdom in the property market. However there were some variations according to the type of Premises and Type of Business.

From these results it can be seen that design reasons such as Building Obsolescence and Changing Office Technology were apparently relatively unimportant although these factors were more important for the Computer/Electronic sector.

Image is far less important for Administration buildings (6%) yet far higher for Computer/Electronics companies (46%). This same sector claims that the Changing Nature of Business encourages relocation (25%) but the Cost of Accommodation was less important (4%).

Table 7.2.2 which follows examined why tenants chose the new building location.

Table 7.2.2 (Question 2.4)
REASONS FOR CHOOSING NEW BUILDING LOCATION

		PREMISES			TYPE OF BUSINESS			
		8%	42%	50%	13%	30%	4%	23%
	G.B. 100%	A	B/R	H	C/E	F	M	PS
Proximity to Markets	33%	18%	46%	27%	36%	38%	9%	48%
Proximity to Suppliers	2%	6%	2%	4%	4%	3%	0%	2%
Proximity to Competitors	6%	0%	9%	6%	7%	6%	0%	12%
Proximity to Support Services	15%	18%	13%	16%	11%	17%	18%	20%
Minimisation of Rents & Costs	21%	35%	14%	23%	25%	23%	18%	10%
Leisure/Recreation/Environ.	11%	6%	8%	14%	18%	11%	27%	4%
Good Housing Stock	6%	6%	6%	6%	11%	5%	0%	6%
Required Staff Availability	25%	35%	16%	31%	32%	28%	27%	14%
Image/Prestige of Address	35%	6%	46%	31%	36%	29%	36%	46%
Road/Rail/Air Communications	35%	24%	27%	43%	39%	34%	45%	16%
Electronic Communications	4%	6%	4%	4%	7%	5%	0%	2%

Where: A = Administration Office
B/R = Branch/Regional Office
H = Headquarters
C/E = Computer/Electronic Companies
F = Financial Companies
M = Manufacturing Companies
PS = Professional Services

The results of Question 2.2 indicate that design may be a contributory factor, especially for the Computer/Electronic sector encouraging tenants to move to new premises.

Question 2.3 revealed that only 4% of interviewees were new to the UK in the last 3-4 years, although there may be a higher percentage of foreign office tenants who have been resident for a longer period of time in certain areas of the country who have taken part in this survey. The survey suggests that the majority of tenants taking premises are moving from other buildings within Great Britain rather than coming from overseas.

From the results of Question 2.4 set out in Table 7.2.2 on the previous page relating to why tenants moved to their new location, Branch/Regional premises (46%) and Professional services (48%) gave Proximity to Markets as the reason more than others and in the latter case their need to be near support services. Minimisation of Rents and Costs was more important for Administration premises (35%) as was the requirement for Available Staff (35%). Image/Prestige was far less important (6%) but for Professional Services far more important (46%).

There were regional variations: the survey found that in the major Scottish cities, image was a more important factor, whilst in the South East, outside Greater London, communications featured highly, particularly for instance near Heathrow Airport. In this same region, minimising the cost of accommodation was also more important than for the Country as a whole.

7.3 Building Design

During the early 1980s, as previously explained, the problem of office building obsolescence featured increasingly as an important factor in the investment market. Obsolescence takes many forms, as previously mentioned. It may be locational obsolescence due to changing pattern of land use and may have little to do with the building structure. Often, however, it is the cost-in-use, functional abilities of buildings or their aesthetics which appear to cause office property to fall in value (McIntosh 1984). It was these three factors which the survey analysed.

The following results identify the order of importance of building design and the areas where, as suggested by Hypothesis I, a design is unsatisfactory.

7.4 Analysis of Data Based on Ranked Design Criteria

Question 3.1 of the questionnaire asks the interviewees to rank in order of importance the following design considerations of their present building:

Structure/Shape/Flexibility

Car Parking

External Appearance/Visual Image

Internal Services/Amenities

Question 5.1 of the questionnaire asked the interviewees to rank in order of importance the following as regards their present premises:

Location within Great Britain

Location within a Town

Design of the Building

Cost of Rent/Maintenance/Rates

Lease Terms

The scores for more than 200 questionnaires were then averaged with the score closer to zero being more important yet the score nearer to four being ranked lowest.

The second question above (Question 5.1) created some confusion between location within Great Britain versus that within a town. The objective of the question was to establish whether regional location was important and secondly, whether the actual location within a town (within a given region) was also important. Due to the confusion reported back from interviewers, the results were aggregated on the basis of ranking the first occasion, within the hierarchy, when the location was mentioned. Hence the results are on a 4 rank not 5 rank basis. The second locational ranking is ignored. This result is not totally satisfactory but for the purposes of this thesis primarily concerned with design, the confusion does not significantly influence the other results which are more important in testing Hypothesis I.

Before analysing the results it is necessary to explain how the Average Rank Result was obtained. The results of question 3.1 and 5.1 weighted each answer on a straight 1, 2, 3 and 4 basis (see table 7.4.1). Multiplying the number of answers given for each rank arrives at an aggregate weighted score for each element. These aggregated totals can then be averaged (to arrive at the ranking the importance of each element) or these aggregates themselves can be aggregated to arrive at the total (top line shows 368). By dividing the number of results (204) into this total, the average total is calculated.

For Question 3.1 on 204, and for Question 5.1 only 201 satisfactorily completed questionnaires were received.

The first test was to apply Kendall's co-efficient of concordance as described earlier in Chapter 6 as a method of non-parametric analysis. This aimed to show whether the interviewees were applying essentially the same standard in ranking the 4 entities.

To calculate Kendall's co-efficient of concordance, first it is necessary to establish S for the sample of 200 interviewees:-

$$S = W \left(\frac{1}{12} K^2 (N^3 - N)\right)$$

$$S = 10,000.25$$

From the results of the survey the following was calculated:

Table 7.4.1 (a)
RANK ORDER ANALYSIS

DESIGN (Q 3.1)

Rank	1	2	3	4	Weighting			
Structure	107	47	35	15	1	2	3	4
Car Park	13	30	67	94	1	2	3	4
External	43	43	50	68	1	2	3	4
Internal	41	84	52	27	1	2	3	4

PLANNING THE MOVE (Q 5.1)

Location	164	17	10	10	1	2	3	4
Design	12	93	43	53	1	2	3	4
Cost	15	65	81	40	1	2	3	4
Lease	10	26	65	100	1	2	3	4

Table 7.4.1 (b)
RANK ORDER ANALYSIS

DESIGN (Q 3.1)

Score (Rank Result x Weight)					Average Total	Total Score 204	Rank	Average Total/
Structure	107	94	105	60	92	368	1	1.68
Car Park	13	60	201	376	163	652	4	3.07
External	43	86	150	272	138	552	3	2.64
Internal	41	168	156	108	118	472	2	2.31

PLANNING THE MOVE (Q 5.1)

Score (Rank Result x Weight)					Average Total	Total Score 201	Rank	Average Total/
Location	164	34	30	40	67	268	1	1.32
Design	12	93	43	53	135	540	2	2.63
Cost	15	130	243	160	137	548	3	2.64
Lease	10	52	195	408	164	656	4	3.16

Table 7.4.2
KENDALLS'S CO-EFFICIENT OF CONCORDANCE TO QUESTION 3.1

Average Rank (See Table 7.4.1)	Total Rj	$\frac{Rj}{N}$	$(Rj - \frac{Rj}{N})^2$
1.68	336	485	22,201
3.07	614	485	16,641
2.64	528	485	1,849
2.31	462	485	529
	Rj = 1940	-	41,220

S = 41,220   j = 200   N = 4

Table 7.4.3
KENDALLS'S CO-EFFICIENT OF CONCORDANCE TO QUESTION 5.1

Average Rank	Total Rj	$\frac{Rj}{N}$	$(Rj - \frac{Rj}{N})^2$
1.32	264	487.5	49,952.25
2.63	526	487.5	1,482.25
2.64	528	487.5	1,640.25
3.61	632	487.5	20,880.25
	Rj = 1950	-	73,955.00

S = 73,955   j = 200   N = 4

Conclusion

Because S = 41,220 and 73,995 above are considerably larger than the test level (S = 10,100.25) we can reject the null hypothesis Ho, and state that Hj, in both cases is statistically significant. In other words, the results imply that the interviewees are applying essentially the same standard of ranking the four entities.

7.5 Rank Order by Various Weightings

It was necessary to know, as previously explained in the methodology, what influence, if any, the weighting attached to each rank entity had on the overall result. By changing the weighting it was possible to find out whether the heirarchy (shown in Table 7.4.1) previously established held good.

Table 7.5.1 (a)
RANK ORDER ANALYSIS

DESIGN (Q 3.1)

Rank	1	2	3	4	Weighting			
Structure	107	47	35	15	1	2	4	8
Car Park	13	30	67	94	1	2	4	8
External	43	43	50	68	1	2	4	8
Internal	41	84	52	27	1	2	4	8

PLANNING THE MOVE (Q 5.1)

Location	164	17	10	10	1	2	4	8
Design	12	93	43	53	1	2	4	8
Cost	15	65	81	40	1	2	4	8
Lease	10	26	65	100	1	2	4	8

Table 7.5.1 (b)
RANK ORDER ANALYSIS

DESIGN (Q 3.1)

Score (Rank Result x Weight)					Average Total Score	Total	Rank
Structure	107	94	140	120	115	460	1
Car Park	13	60	268	752	273	1092	4
External	43	86	200	544	218	872	3
Internal	41	168	208	216	158	632	2

PLANNING THE MOVE (Q 5.1)

Score (Rank Result x Weight)					Average Total Score	Total	Rank
Location	164	34	40	80	80	320	1
Design	12	186	172	424	199	796	3
Cost	15	130	324	320	197	788	2
Lease	10	52	260	808	281	1124	4

Table 7.5.2 (a)
RANK ORDER ANALYSIS

DESIGN (Q 3.1)

Rank	1	2	3	4	Weighting			
Structure	107	47	35	15	2	4	16	256
Car Park	13	30	67	94	2	4	16	256
External	43	43	50	68	2	4	16	256
Internal	41	84	52	27	2	4	16	256

PLANNING THE MOVE (Q 5.1)

Location	164	17	10	10	2	4	16	256
Design	12	93	43	53	2	4	16	256
Cost	15	65	81	40	2	4	16	256
Lease	10	26	65	100	2	4	16	256

Table 7.5.2 (b)
RANK ORDER ANALYSIS

DESIGN (Q 3.1)

Score (Rank Result x Weight)					Average Total Score	Total	Rank
Structure	214	188	560	3840	1201	4804	1
Car Park	28	120	1072	24064	6321	25284	4
External	86	172	800	17408	4617	18468	3
Internal	82	336	832	6912	2041	8164	2

PLANNING THE MOVE (Q 5.1)

Score (Rank Result x Weight)					Average Total Score	Total	Rank
Location	328	68	160	2560	779	3116	1
Design	24	372	688	13568	3683	14652	3
Cost	30	260	1296	10240	2957	11828	2
Lease	20	104	1040	25600	6691	26764	4

Table 7.5.3 (a)
RANK ORDER ANALYSIS

DESIGN (Q 3.1)

Rank	1	2	3	4	Weighting			
Structure	107	47	35	15	1	2	2	4
Car Park	13	30	67	94	1	2	2	4
External	43	43	50	68	1	2	2	4
Internal	41	84	52	27	1	2	2	4

PLANNING THE MOVE (Q 5.1)

Location	164	17	10	10	1	2	2	4
Design	12	93	43	53	1	2	2	4
Cost	15	65	81	40	1	2	2	4
Lease	10	26	65	100	1	2	2	4

Table 7.5.3 (b)
RANK ORDER ANALYSIS

DESIGN (Q 3.1)

Score (Rank Result x Weight)					Average Total Score	Total	Rank
Structure	107	94	70	60	83	332	1
Car Park	13	60	134	376	146	584	4
External	43	88	100	272	125	500	3
Internal	41	168	104	108	105	420	2

PLANNING THE MOVE (Q 5.1)

Score (Rank Result x Weight)					Average Total Score	Total	Rank
Location	164	34	20	40	65	260	1
Design	12	186	86	212	124	496	3
Cost	15	130	162	160	117	468	2
Lease	10	52	130	400	148	592	4

Firstly, weighting the scores by 1, 2, 4 and 8 was tried (see Table 7.5.1).

This had no influence on the ranking of the "Design" hierarchy, but did influence the "Planning the Move" hierarchy. The design and cost elements changed places from second to third although the resulting scores remained extremely close.

In Table 7.5.2 the weightings were changed to 2, 4, 16 and 256; in other words a geometric progression by squaring each rank. This did not alter the ranking from Table 7.5.1.

In Table 7.5.3 equal weight to the second and third choice was tried by giving weights 1, 2 3 and 4. Once again this did not change the resulting hierarchy.

For these reasons it was decided it would be satisfactory to continue the analysis on the basis of the four ranked elements to be weighted 1, 2, 3 and 4 as originally used to calculate the Kendall co-efficient of concordance as previously explained and based on Table 7.4.1.

7.6 Rank Order Analysis by Standard Deviation

With a view to understanding the regional nature of the ranking statistics, the National figures were disaggregated into the principle economic regions. The figures for the City of London and Greater London were also examined as can be seen in Table 7.6.1. The average rank as calculated in Table 7.4.1 was used and the standard deviation calculated from which the relative standard deviation could be found.

These statistics show that there does not appear to be a marked regional difference in the results for different parts of the country. However, it is perhaps relevant to note that the figures for the West Midlands and East Midlands are slightly different. The writer suspects that the interviewer in these two cases did not obtain accurate information and it is important to remember that the sample sizes of several of these regions was below the statistically critical number, which means the results should be treated with caution.

When examining the relative standard deviation for structure, car park, external appearances and internal services (Ranking Design) it is noted that the ranking of "structure" in first place has received a fairly volatile response. On the other hand, the relative standard deviation of 0.299 relating to car parking is far less volatile.

This implies that, although the structure/shape of the office building is overall regarded as most important, there is a variation in the responses. The response to tenants view of car parking is far more consistent in being in fourth place behind the other three aspects of design.

Table 7.6.1
RANK ORDER ANALYSIS : NATIONAL OFFICE SURVEY AND DESIGN

Region	No. of Questionnaires	Structure	Car Park	External Appearance	Internal Services
City of London	9				
	Average	1.880	3.570	2.000	2.250
	Stand. Deviation	0.830	0.790	1.070	1.030
	Relative S D	0.440	0.220	0.535	0.464
Greater London	37				
	Average	1.570	3.030	2.620	2.278
	Stand. Deviation	0.960	0.960	1.090	0.840
	Relative S D	0.610	0.320	0.420	0.370
Outer South East	57				
	Average	1.760	3.080	2.630	0.210
	Stand. Deviation	1.060	0.840	1.170	0.940
	Relative S D	0.600	0.270	0.440	0.420
South West	17				
	Average	1.500	3.160	2.600	2.500
	Stand. Deviation	0.810	1.020	1.090	1.050
	Relative S D	0.540	0.320	0.740	0.420
East Anglia	7				
	Average	1.710	3.330	3.000	1.830
	Stand. Deviation	1.110	0.820	0.630	1.170
	Relative S D	0.220	0.240	0.210	0.630
West Midlands	8				
	Average	2.250	2.870	2.500	2.370
	Stand. Deviation	1.280	1.130	1.190	1.060
	Relative S D	0.570	0.390	0.480	0.450
East Midlands	6				
	Average	1.500	2.500	3.660	2.330
	Stand. Deviation	0.550	1.220	0.820	0.820
	Relative S D	0.370	0.480	0.220	0.350
North West	17				
	Average	1.820	3.180	2.250	2.250
	Stand. Deviation	1.010	1.050	1.290	0.930
	Relative S D	0.550	0.330	0.570	0.410
North	11				
	Average	1.540	3.300	3.090	2.000
	Stand. Deviation	0.820	0.670	1.040	0.890
	Relative S D	0.530	0.200	0.340	0.440
Yorkshire and Humberside	7				
	Average	1.860	3.280	3.140	1.710
	Stand. Deviation	1.070	0.760	1.070	0.750
	Relative S D	0.570	0.230	0.340	0.440

Region	No. of Questionnaires	Structure	Car Park	External Appearance	Internal Services
Wales	12				
	Average	1.830	3.160	2.170	2.830
	Stand. Deviation	0.830	0.830	1.270	1.110
	Relative S D	0.450	0.260	0.580	0.390
Scotland	23				
	Average	1.450	2.770	2.770	2.680
	Stand. Deviation	0.800	1.060	1.190	0.890
	Relative S D	0.550	0.380	0.430	0.330
Great Britain	211				
	Average	1.680	3.070	2.640	2.310
	Stand. Deviation	0.950	0.920	1.160	0.940
	Relative S D	0.565	0.299	0.439	0.406

Table 7.6.2
RANK ORDER ANALYSIS : NATIONAL OFFICE SURVEY AND PLANNING THE MOVE

Region	No. of Questionnaires	Location	Building Design	Cost of Accommodat.	Lease Terms
City of London	9				
	Average	1.000	2.780	2.550	3.250
	Stand. Deviation	0.000	1.090	0.730	1.030
	Relative S D	0.000	0.390	0.280	0.310
Greater London	37				
	Average	1.110	3.030	2.660	3.060
	Stand. Deviation	0.400	0.900	0.090	0.850
	Relative S D	0.360	0.290	0.340	0.280
Outer South East	57				
	Average	1.310	2.520	2.520	3.500
	Stand. Deviation	0.700	0.700	0.810	0.780
	Relative S D	0.530	0.280	0.320	0.220
South West	17				
	Average	1.670	1.930	2.690	2.930
	Stand. Deviation	0.900	1.000	1.030	1.250
	Relative S D	0.540	0.520	0.380	0.430
East Anglia	7				
	Average	1.140	2.430	3.140	3.280
	Stand. Deviation	0.380	0.790	0.690	1.110
	Relative S D	0.330	0.320	0.150	0.330
West Midlands	8				
	Average	1.250	2.620	2.870	3.370
	Stand. Deviation	0.460	1.060	1.120	0.740
	Relative S D	0.370	0.400	0.390	0.220
East Midlands	6				
	Average	1.500	3.170	2.170	2.830
	Stand. Deviation	1.220	0.980	0.750	1.170
	Relative S D	0.810	0.310	0.340	0.410
North West	17				
	Average	1.530	2.470	2.370	3.330
	Stand. Deviation	1.120	0.640	1.020	0.970
	Relative S D	0.730	0.260	0.430	0.290
North	11				
	Average	1.270	2.450	3.100	3.000
	Stand. Deviation	0.900	0.930	0.870	0.630
	Relative S D	0.710	0.380	0.280	0.210
Yorkshire and Humberside	7				
	Average	1.400	2.700	2.800	3.000
	Stand. Deviation	0.970	0.820	0.920	1.150
	Relative S D	0.690	0.310	0.330	0.380

Region	No. of Questionnaire	Location	Building Design	Cost of Accommodat.	Lease Terms
Wales	12				
	Average	1.250	2.620	2.870	3.370
	Stand. Deviation	0.460	1.060	1.130	0.740
	Relative S D	0.370	0.100	0.390	0.220
Scotland	23				
	Average	1.450	2.710	2.680	2.700
	Stand. Deviation	0.910	1.010	0.840	0.980
	Relative S D	0.630	0.370	0.310	0.360
Great Britain	211				
	Average	1.320	2.630	2.630	3.160
	Stand. Deviation	0.770	0.950	0.870	0.930
	Relative S D	0.631	0.361	0.331	0.294

The analysis relating to location, building design, cost and lease term also revealed different levels of volatility as can be seen by Table 7.6.2. Once again the ranking of location as number one appears to be far more volatile than for instance the ranking of lease terms; the relative standard deviations are 0.631 and 0.294 respectively which may be due to the confusing nature of the question as previously discussed. As with the previous ranking analysis those entities ranked two and three fall somewhere between these two extremes in volatility.

The significance of this analysis is that the interviewees are far more certain of the ranking of the fourth entity whilst less certain of ranking the first entity but there are no major regional variations from the national results.

One of the objectives of this statistical analysis was to clarify whether there were regional differences within the office market. Examining those regions with a statistically significant sample size reveals that there are no significant differences throughout the country. This implies that, with reference to Hypothesis I, office tenants throughout the country are giving generally similar responses to the questions. Differences, as discussed later, did arise when different subsectors within the office market were examined in relation to Hypothesis II.

7.7 Principal Design Analysis

As a way to test Hypothesis I, that office tenants are not satisfied with the design of their buildings, one of the objectives of the questionnaire, as previously explained, was to divide the design questions into four categories. These were the a) shape of the floor, b) the car parking, c) the external appearance and d) the internal services. At the conclusion of each part of the questionnaire relating to these four separate areas of design, interviewees were asked to state whether they felt that each of these aspects within their building was "Good, Satisfactory or Poor". (See Questions 3.2 (g), 3.3 (e) and (f), 3.4 (d) and 3.5 (f).

A range of responses were analysed and disaggregated according to location, rent, type of premises, age of buildings, size and nature of business. These will be discussed in relation to Hypothesis II later.

With reference to Table 7.7.1 fewer tenants in the City of London and the West Midlands regarded the shape of their floor as being good than for the nation as a whole. Within East Anglia, Wales, Greater London and the City of London there was a greater level of dissatisfaction with the level of car parking.

When examining the results for the external appearance of the building overall, there was a higher degree of satisfaction with this aspect of design than for those aspects concerned with functional matters. This may be because office tenants have never really thought about the external appearance of their building or that British Architecture has actually supplied a desirable product.

Whilst the writer finds the second proposition difficult to understand, in only three regions (see Table 7.7.1) were more than 10% of tenants dissatisfied with the external image. Far more tenants were dissatisfied with the internal services/amenities with particular poor responses being received in East Anglia and the North of England.

Table 7.7.1
OVERALL DESIGN ANALYSIS

	%	SE %	SW %	EA %	WM %	EM %	NW %	N %	YH %	W %	S %	GL %	C %	GB %
For your purposes is the shape of the floor:	GOOD	49	53	43	25	67	53	45	43	33	61	41	22	47
	SATISFACTORY	46	35	57	75	33	35	55	43	50	35	49	56	45
	POOR	5	6	0	0	0	12	0	14	17	4	11	22	8
For management is the car parking:	GOOD	46	18	14	25	67	24	18	14	25	39	35	22	35
	SATISFACTORY	33	47	29	38	0	41	55	29	33	39	32	11	32
	POOR	21	35	57	38	33	35	27	57	42	22	32	67	32
For staff is the car parking:	GOOD	26	24	11	13	50	18	27	14	8	22	14	11	20
	SATISFACTORY	33	24	11	25	17	24	27	14	0	26	14	11	22
	POOR	40	53	78	63	33	59	45	42	92	52	73	78	58
Do you consider the external appearance/ visual image of your building to be:	GOOD	60	76	29	75	33	71	45	71	58	78	68	67	64
	SATISFACTORY	35	18	57	25	50	29	45	29	33	17	32	22	31
	POOR	5	6	14	0	17	0	9	0	8	4	0	11	5
Are the internal services/ amenities overall:	GOOD	46	47	14	25	17	23	9	43	42	52	43	33	39
	SATISFACTORY	54	47	86	75	67	76	82	29	42	39	46	44	54
	POOR	0	6	0	0	17	0	9	29	17	9	11	11	7

Where: SE = South East
SW = South West
EA = East Anglia
WM = West Midlands
EM = East Midlands
NW = North West
N = North
YH = Yorkshire and Humberside
W = Wales
S = Scotland
GL = Greater London
C = City of London
GB = Great Britain

The results for Great Britain as a whole, shown on Table 7.7.1, were tested further to identify the statistical significance of the results. The objective was to identify which of the five categories differed from the mean expected.

Using the chi-squared test with a level of significance of 0.95 and a variance of 5, (producing a co-efficient of 1.145) the results were examined for their statistical significance.

Table 7.7.2
DESIGN ANALYSIS CALCULATION
Test
CHI SQ x 2
0.95 (5) = 1.145

	Good	Satis	Poor	Chi-Sq Good $(O-E)^2$ 40	Chi-Sq Satis $(O-E)^2$ 37	Chi-Sq Poor $(O-E)^2$ 22
Shape of Floor	47	45	8	1.23	1.73	8.91
Car Park Man.	35	32	32	1.23	*0.11	4.55
Car Park Staff	20	22	58	10.00	6.08	58.91
External App.	64	31	5	14.40	*0.97	13.14
Internal Amen.	39	54	7	*0.03	7.81	10.23
TOTAL	203	187	110			
Average (Mean)	40	37	22			

NB * = Not statistically significant

An examination of the "Good" classification reveals that the shape of the floor and the external appearance were regarded as statistically significantly better than the mean whilst the car parking, especially for the staff, was considered to be statistically significantly worse than the mean.

An examination of the "Poor" classification revealed that all the results were statistically significant; in the case of car parking, the facilities were regarded far worse than would be expected. This type of analysis, with the exception of the car parking, did not prove Hypothesis I that office tenants are dissatisfied with design.

In addition to the external appearance being generally regarded as "good", the survey (Question 1.6) found that 80% of occupants of single-tenanted buildings preferred a building with its own identity whilst for tenants of multi-tenanted buildings, 61% said that they would prefer a single-tenanted building with its own identity, which clearly does confirm Hypothesis I, that building design in these cases is not satisfactory.

For the country as a whole 84% felt that the appearance of the main office entrance was important and 81% thought the overall appearance of the building to be important.

7.8 Internal Design

As a further way to test Hypothesis I, question 3.5 required interviewees to categorise 13 areas of internal design into "Good/Satisfactory/Poor". This produced results which are examined for each sub-market which will be discussed later in greater detail.

The purpose of Table 7.8.1 was to examine the statistical significance of the results from Great Britain as a whole to see whether there was a different opinion from tenants for these principal areas of design.

As before, the Chi-squared test was used to a level of significance of 0.95 with a permitted variance of 5.

This analysis found that, assuming all areas of design are regarded as "Good" to an equal level, the Internal/Entrance hall and Lift Capacity was regarded as better than on average. The Internal Environmental Control and the signs within the building were regarded as significantly not as good as other areas of design.

An examination of the "Poor" classification found that the Internal Entrance Hall, Lift capacity, Artificial Light and Ceiling Design were not regarded as poor as other areas of design.

From this analysis, and with reference to Hypothesis I, the design categories Heating, Internal Environmental Control, Signs within Buildings, Cable Trunking and Kitchen Catering Facilities were regarded as mainly satisfactory or poor. In other words, the Hypothesis has not been confirmed but the results have identified those areas of design which are predominantly not regarded as good throughout Great Britain.

Table 7.8.1
NATIONAL OFFICE SURVEY : INTERNAL DESIGN ANALYSIS
Test
CHI SQ x 2
Chi-Sq

0.95 (5) = 1.145

Design Features	Percentage Good	Satis	Poor	Chi-Sq Good $(O-E)^2$ 43	Chi-Sq Satis $(O-E)^2$ 37	Chi-Sq Poor $(O-E)^2$ 20
Internal Entrance Hall	53	34	13	*2.33	0.24	*2.45
Lift Capacity	50	38	12	*1.14	0.03	*3.20
Lift Performance	43	35	22	0.00	0.11	0.20
Artificial Lighting	56	36	8	*3.93	0.03	*7.20
Natural Daylight	49	35	16	0.84	0.11	0.80
Heating	36	45	18	*1.14	*1.73	0.20
Internal Envirn. Control	26	42	32	*6.72	0.68	*7.20
Carpet/Flooring	49	32	19	0.84	0.68	0.05
Provis. for Cable Trunk.	40	28	32	0.21	*2.19	*7.20
Ceiling Design	41	46	13	0.09	*2.19	2.45
Toilets	45	37	18	0.09	0.00	0.20
Kitchen Cater. Facilities	37	27	36	0.84	*2.70	*12.80
Signs Within Building	33	42	25	*2.33	0.68	*1.25
Total	558	477	264			

* = Statistically Significant

7.9 National Office Design Survey 1986

The results from the original 1985 National Office Design Survey indicated that office tenants throughout Great Britain do not generally regard the design of their buildings as good. This general conclusion especially relates to the design of internal amenities.

The problem with the results of this survey was that it had not clarified whether such aspects as the design of the car park was more or less important than the External Appearance or the arrangements for Kitchen/Catering Facilities. This last aspect of design seemed to come in for a surprisingly high level of criticism in the 1985 survey results.

The 1986 National Office Design Survey was undertaken specifically to clarify these confusions. As explained in the methodology of this thesis, due to the resources of the writer, the survey was undertaken using a postal questionnaire to the original participants in the 1985 survey.

The main question (see Appendix to this thesis) asked the tenants to rank, in order of importance, eleven aspects of building design.

Table 7.9.1 below shows the results of the follow-up questionnaire sent out in 1986.

Table 7.9.1
NATIONAL OFFICE DESIGN SURVEY MAIN RESULTS

Rank	Aspect of Design	Result (Average Rank)
1	Internal Environmental Control (ie. air conditioning, solar protection, ventilation)	3.0
=2	Heating System	4.3
=2	Improved Car Parking	4.3
4	Quality of Internal Finishes	5.2
5	Security	5.4
6	Provision for Cable Trunking (ie. raised floor/ducting)	5.6
7	Toilet Facilities	5.9
=8	Entrance Hall	6.5
=8	Life Performance/Reliability	6.5
10	Arrangement for Kitchen/Catering Facilities	7.0
11	External Appearance of Building	7.5

The results reflect the average score between one and eleven. The closer to one, the more important the aspect of design, whilst the closer to eleven the less important.

Once again, this type of analysis does not simply discover that tenants are dissatisfied with the design of their building, it identifies those areas of design which are more important than others.

7.10

The implication from Hypothesis 1 is that, not only are tenants unhappy with some areas of office design but those who design office buildings, mainly architects, (as well as developers and investors) place different priorities on the design elements of office buildings. As explained in The Methodology (Chapter 6) 30 final year architect students were asked to rank the same eleven areas of design. The trainee architects produced the following ranking order:-

Table 7.10.1
TENANTS DESIGN RANKING COMPARED WITH ARCHITECTS

Aspect of Design	Rank Order By Tenants (as table 7.9.1)	Rank Order By Architecture
Lift Performance/Reliability	8	=6
Internal Environmental Control (ie air conditioning, solar protection, ventilation	1	1
Heating System	2	2
Provision for Cable Trunking (ie raised floor, ducting)	6	=9
Arrangement for Kitchen/Catering Facilities	10	=9
Improved Car Parking	2	8
External Appearance of Building	11	4
Quality of Internal Finishes	4	3
Toilet Facilities	7	11
Security	5	5
Entrance Hall	8	=6

The three most notable differences relate firstly to the external appearance where architecture students rank it 4th and tenants 11th, secondly, the improved car parking where architects ranked it as only 8th yet tenants ranked it 2nd and thirdly, toilet facilities which architects ranked as least important yet tenants ranked 7th.

This analysis points to a potential difference between those who design buildings and those who use them.

This piece of work, whilst examining the Hypothesis I of this thesis, is not meant to be statistically rigourous but implies that far more work ought to be undertaken to see whether those who design office buildings have a full appreciation of tenants (consumers) requirements. Very few architects (with the exception of Duffy 1986) undertake structured consumer research on the product they are designing!

7.11 Un-Necessary Expenditure

Office tenants were also asked which aspects of design had received un-necessary expenditure in their building. Most tenants did not bother to answer this question, revealing the limitations of this method of collecting data, but those who did revealed the following:-

Aspects of Un-Necessary Expenditure	Rank	Percentage Yes
Lift Performance/Reliability	= 4	3.9
Internal Environmental Control (ie air conditioning, solar protection, ventilation)	3	5.2
Heating System	=10	1.3
Provision for Cable Trunking (ie raised floor/ducting)	=10	1.3
Arrangement for Kitchen/Catering Facilities	= 4	3.9
Improved Car Parking	= 7	2.6
External Appearance of Building	1	15.6
Quality of Internal Finishes	= 4	3.9
Toilet Facilities	= 7	2.6
Security	= 7	2.6
Entrance Hall	2	10.4

Despite the low response (ten responses or less out of 77 questionnaires returned to each element of design), these figures reflect the results of the main questions, particularly as regards the design of the external appearance and entrance hall where the responses imply unnecessary money has been spent.

7.12 External Appearance

This aspect of design is regarded as least important. However, it is well known that appearance can add value to a building even if, from the operator's view point, it is less relevant. For instance good external design can enable a building to be let at an early date rather than remaining empty which has obvious financial implications. The adage sometimes used in the field of public relations is that you never get a second chance to make a first impression. The external appearance creates that first impression.

This aspect of design raises fundamental questions regarding this type of research. It is known from other market research that individuals "think one thing, say another, yet do something completely different". In other words they may or may not think external design is important but won't admit to it. Alternatively, when choosing a new office building, they may be significantly influenced by a buildings external appearance, especially the entrance hall. Once they are in residence the internal problems, not the external design, become more important in the day-to-day use of the building.

Chapter 8

THE RESULTS FOR SUBSECTORS WITHIN GREAT BRITAIN

Chapter 8

THE RESULTS FOR SUBSECTORS WITHIN GREAT BRITAIN

8.0

The Hypothesis II suggested that different subsectors within the office market require different types of design. The results in this chapter concentrate on this hypothesis.

8.1 The Subsectors

The subsectors which will be considered are as follows:

Location: Central Business District/Non-Central Business District

Premises: Headquarters/Branch-Regional/Administration

Size : Less than 5000sq ft/5-20000sq ft/more than 20000sq ft

Business: Computer-Electronic/Financial Services/Manufacturing/ Professional Services

The submarkets in relation to the Department of Trade & Industry's main economic regions are not considered in this section, not only because some of the results for regions provide unreliably small sample sizes but also because this aspect has been adequately covered in the previous chapter.

8.2 Overall Design Analysis

The questionnaire (Part III) concerning design as discussed in the previous chapter was divided into four main areas:

the structure/shape of floor

the car parking

the external appearance, and

the internal amenities.

At the end of each subsection of the questionnaire the interviewee was asked whether he/she considered their building to be good/satisfactory/poor in relation to that aspect of design.

8.2.1 Location

The results are set out in Table 8.2.1. These show that, in relation to the location and Great Britain, the structure/shape of the floor was generally good or satisfactory but there was a slight bias towards non CBD (Central Business District) tenants (56%) considering the floor shape being better than (42%) for CBD tenants.

A higher percentage of CBD tenants also thought the design was poor (10%).

In terms of location there was a far larger difference in relation to car parking. 45% of non CBD tenants thought car parking was good for management yet only 28% thought it was good for CBD locations.

A large difference was noticed in relation to car parking for staff with 66% in CBD locations considering it poor and only 39% considering it poor for staff in non CBD areas.

In terms of external appearance, there was not a wider deviation from the national average, 66% of CBD tenants considering it good.

The results for the internal amenities were different with only 37% in CBD locations considering it good yet 45% in non CBD locations giving their building the same rating.

Table 8.2.1

DESIGN ANALYSIS BY SUBSECTOR

				RENT ABOVE				PREMISES			SIZE 000 SF.			BUSINESS				AV.
		NC	C	0	10	15	20	A	BR	H	0	5	20	CE	F	M	PF	GB
DESIGN		%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
For your purposes is the shape of the floors:	GOOD	56	42	54	39	20	20	59	42	47	55	47	38	65	40	55	54	47
	SATIS	39	48	38	57	47	80	29	51	43	44	42	50	46	57	45	33	45
	POOR	3	10	8	3	33	0	12	6	8	1	10	12	14	5	0	10	8
For management is the car parking:	GOOD	45	28	36	26	47	0	29	26	38	25	42	34	29	29	36	33	35
	SATIS	30	37	32	46	13	40	47	40	28	40	28	34	32	40	27	40	32
	POOR	24	36	32	28	40	60	24	34	32	35	30	32	39	33	36	27	32
For staff, is the car parking:	GOOD	38	12	22	20	13	0	12	14	26	19	23	20	29	11	36	19	20
	SATIS	23	21	21	26	13	20	28	17	24	20	20	25	21	19	27	21	22
	POOR	39	66	57	54	73	80	59	69	48	61	57	55	50	71	36	60	58
Do you consider the external appearance/visual image of your building to be:	GOOD	61	66	68	56	60	80	35	69	63	64	65	63	61	88	91	69	64
	SATIS	33	30	26	41	40	20	59	26	31	31	28	34	32	30	9	29	31
	POOR	6	4	6	3	0	0	6	5	5	5	7	3	7	5	0	2	5
Are the internal services/amenities	GOOD	45	36	35	39	53	80	35	32	45	24	45	49	46	32	55	35	39
	SATIS	47	57	58	52	33	20	53	63	46	68	50	43	46	67	27	56	54
	POOR	8	6	6	7	13	0	12	6	7	8	5	7	7	3	9	8	7

Where on Table 8.2.1

NON CBD	= NC
CBD	= C
£0–£10 PSF	= 0
£10–£15 PSF	= 10
£15–£20 PSF	= 15
+ £20 PSF	= 20
ADMIN	= A
BRANCH/REGIONAL	= BR
H.Q.	= H
0–5,000 SQ FT	= 0
5–20,000 SQ FT	= 5
+ 20,000 SQ FT	= 20
COMPUTERS/ELECTRONIC	= CE
FINANCIAL SERVICES	= F
MANUFACTURING	= M
PROFESSIONAL SERVICES	= PF
GREAT BRITAIN AVERAGE	= AV GB

8.2.2 Premises

When examining the data by disaggregation for different premises the results for Administration premises were small and statistically less reliable (16 results). The major difference related to the car parking where 38% of Headquarters buildings thought that car parking was good for management yet only 26% of Branch-Regional offices thought it was good.

Staff car parking for staff in Headquarters buildings (26% good) was also considered differently to Branch-Regional offices (14% good).

The results relating to the External Appearance for Manufacturing were not reliable due to the small sample size but the results for Internal Amenities were more meaningful. 45% of Headquarters tenants thought the Internal Amenities were good yet only 32% of Branch-Regional offices gave it the same rating.

8.2.3 Size of Building

The size disaggregation also showed up some significant differences. In terms of the Structure/floor shape, of small building tenants, 55% said it was good yet this fell to only 38% in larger buildings.

A far more mixed result was obtained relating to Car Parking. 25% in small buildings said it was good yet 42% in medium sized buildings and 34% in large buildings gave it the same rating.

The results relating to the External Appearance were generally fairly consistent throughout but the results for the Internal Amenities were more varied with 24% of tenants in small buildings classifying them as good compared with 45% and 49% in the larger two categories.

8.2.4 Business Sector

As only 4% (8 questionnaires) were from the manufacturing sector, these results must be treated with caution. Other results do point to differences in opinion about building design.

65% of the Computer-Electronic sector considered the Structure/shape to be good compared with 40% in the Financial Sector and 54% in the Professional Services sector.

In relation to Car Parking for Management, 29% of Computer-Electronic and Financial Services tenants thought it was good compared with 33% for Professional Services.

Car parking for staff produced a more noticeable result with 29% of Computer-Electronic tenants regarding it as good yet only 11% for Financial Services and 19% of Professional Services giving it the same rating.

The Financial Services (88% good) seemed happier with the External Appearance of their office building with Computer-Electronic (at 61%) giving it a lower rating.

The results relating to the Internal Amenities showed that 46% of Computer-Electronic tenants yet only 32% of Financial Services and 35% of Professional Services tenants considered it good. It is this area of design which has come in for most anecdotal criticism in recent years, hence the results for this area of building design were examined in greater depth (see Section 8.3 which follows).

8.2.5 Rental Value

Later in Chapter 9, the results will be considered relating age and rental value. This analysis analyses the Hypothesis II in relation to subsectors as determined by the level of rent being paid in 1985.

The overall result is that for the Structure/Shape and for the Car Parking, the more expensive the rent level, the less acceptable the design was. The converse applied to the External Appearance and the Internal Amenities with those in higher rented buildings finding the design more acceptable.

It is clear from these results as set out in Table 8.2.1 that there are different levels of satisfaction in different office subsectors; it is not a homogenous market.

8.3 Internal Amenities Analysis

In Chapter 7, Table 7.8.1 showed the results for Great Britain relating to the Internal Amenities. Interviewees were asked to rate as good/satisfactory/poor 13 areas of internal building design. These were then subjected to the chi-squared test to identify those results which were statistically significant from those from the average for Great Britain.

The data was disaggregated into the subsectors as previously described. The objective was to see whether the results for the subsectors did agree within Hypothesis II; that different types of office user require different requirements for building design.

8.3.1 Location (CBD - Non CBD)

The survey revealed different results for non-CBD and CBD office buildings. In recent years there has been a growth of out of town, sometimes campus style, office buildings. Each market appeals to a different segment of the office market.

Table 8.3.1 shows that 69% of the total data (relating to CBD offices) reveals no statistical deviation from the national data. The remaining 31% of the sample (relating to non-CBD offices) however did show statistically significant results. In other words for office tenants occupying buildings outside the traditional central business district, there is often a lower level of satisfaction with office building design confirming Hypothesis II.

Using the chi-squared test as previously discussed, with a level of significance of 0.95 and a variance of 5, using the "Good" and "Poor" classifications, and comparing the result with the total sample for Great Britain, the following emerged:

For non-CBD buildings the Lift Capacity and Lift Performance were significantly worse. The problem with these results was that the data produced did not identify whether or not the building had a lift. The "Poor" classification is therefore a better test. This also revealed a higher level of dissatisfaction with lift capacity and performance.

The provision for Cable Trunking was also significantly different being regarded as worse than for the national sample.

Kitchen and Catering Facilities produced a result showing a greater polarisation with more buildings having "Good" facilities. On the other hand the Signs Within the Building were regarded as less acceptable. This result is less important as the results did not clearly identify those tenants who were single tenants who would normally erect their own signs and would not rely on the investor/owner to provide these, which would often be the case with multi-let office buildings.

Table 8.3.1
ANALYSIS BY LOCATION - NON-CBD
Test
CHI SQ x 2
0.95 (5) = 1.145

	GB	GB	Non-CBD	Non-CBD	Chi-Sq	Chi-Sq
Design Features	Good	Poor	Good	Poor	Good	Poor
Internal Entrance Hall	53	13	51	11	0.08	0.31
Lift Capacity	50	12	29	8	*8.82	*1.33
Lift Performance	43	22	23	14	*9.30	*2.91
Artificial Lighting	56	8	48	8	1.14	0.00
Natural Daylight	49	16	45	17	0.33	0.06
Heating	36	18	36	24	0.00	*2.00
Internal Envirn. Cont.	26	32	26	27	0.00	0.78
Carpet/Flooring	49	19	58	12	*1.65	*2.58
Provis. for Cable Trunk.	40	32	39	36	0.03	0.50
Ceiling Design	41	13	35	15	0.88	0.31
Toilets	45	18	44	20	0.02	0.22
Kitchen Cater. Facilits.	37	36	44	29	*1.32	*1.36
Signs Within Building	33	25	26	18	*1.48	*1.96

Sample Size 66 (31%)

ANALYSIS BY LOCATION - CBD
Test
CHI SQ x 2
0.95 (5) = 1.145

	GB	GB	CBD	CBD	Chi-Sq	Chi-Sq
Design Features	Good	Poor	Good	Poor	Good	Poor
Internal Entrance Hall	53	13	52	14	0.02	0.08
Lift Capacity	50	12	43	11	0.98	0.08
Lift Performance	43	22	38	19	0.58	0.41
Artificial Lighting	56	8	59	8	0.16	0.00
Natural Daylight	49	16	50	15	0.02	0.06
Heating	36	18	35	15	0.03	0.50
Internal Envirn. Cont.	26	32	26	33	0.00	0.03
Carpet/Flooring	49	19	45	23	0.33	0.84
Provis. for Cable Trunk.	40	32	39	30	0.03	0.13
Ceiling Design	41	13	44	12	0.22	0.08
Toilets	45	18	45	12	0.00	0.06
Kitchen Cater. Facilits.	37	36	34	38	0.24	0.11
Signs Within Building	33	25	28	22	0.76	0.36

Sample Size 145 (69%)

NB: * = Statistically Significant

8.3.2 Building Size

The sample data was disaggregated with 3 size bands; under 5,000sq ft, 5-20,000sq ft and over 20,000sq ft (see Table 8.3.2). As with the previous analysis, using the Chi-squared test, the data was tested for its statistical significance.

With the exception of Kitchen Facilities which were regarded as better, and Signs and Lift Capacity which were regarded as poor, the results for larger buildings as illustrated by Table 8.3.2 were not statistically significant.

For the middle range sized buildings, Table 8.3.2 indicated Lift Capacity and Performance or the Signs were not regarded as adequate. The Internal Environmental Control and the Kitchen/Catering Facilities were also regarded as worse.

For smaller buildings below 5,000sq ft in size, the Internal Entrance, Lift Capacity, Lift Performance, Cable Trunking, Kitchen/Catering Facilities and the signs were all regarded as significantly worse than the national average.

For medium sized buildings the Lift Capacity and Performance were considered worse than the national average.

The results show that, not only is Hypothesis II confirmed but the design of smaller buildings is far less satisfactory from a tenants point of view.

Table 8.3.2
ANALYSIS BY BUILDING SIZE - Less than 5,000sq ft
Test
CHI SQ x 2
0.95 (5) = 1.145

	GB	GB	- 5000	- 5000	Chi-Sq	Chi-Sq
Design Features	Good	Poor	Good	Poor	Good	Poor
Internal Entrance Hall	53	13	43	17	*1.89	*1.23
Lift Capacity	50	12	23	8	*14.58	*1.33
Lift Performance	43	22	23	11	*9.30	*5.50
Artificial Lighting	56	8	56	9	0.00	0.13
Natural Daylight	49	16	48	17	0.02	0.06
Heating	36	18	31	19	0.69	0.06
Internal Envirn. Cont.	26	32	27	32	0.04	0.00
Carpet/Flooring	49	19	48	17	0.02	0.21
Provis. for Cable Trunk.	40	32	32	33	*1.60	0.03
Ceiling Design	41	13	44	9	0.22	*1.23
Toilets	45	18	47	21	0.09	0.50
Kitchen Cater. Facilits.	37	36	23	45	*5.30	*2.25
Signs Within Building	33	25	23	23	*3.03	0.16

Sample Size 35%

ANALYSIS BY BUILDING SIZE - 5-20,000sq ft
Test
CHI SQ x 2
0.95 (5) = 1.145

	GB	GB	5-20K	5-20K	Chi-Sq	Chi-Sq
Design Features	Good	Poor	Good	Poor	Good	Poor
Internal Entrance Hall	53	13	60	8	0.92	*1.92
Lift Capacity	50	12	38	13	*2.88	0.08
Lift Performance	43	22	30	23	*3.93	0.05
Artificial Lighting	56	8	55	3	0.02	*3.13
Natural Daylight	49	16	50	13	0.02	0.56
Heating	36	18	38	22	0.11	0.89
Internal Envirn. Cont.	26	32	27	25	0.04	*1.53
Carpet/Flooring	49	19	47	22	0.08	0.47
Provis. for Cable Trunk.	40	32	47	28	*1.23	0.50
Ceiling Design	41	13	45	13	0.39	0.00
Toilets	45	18	42	15	0.20	0.50
Kitchen Cater. Facilits.	37	36	38	28	0.03	*1.78
Signs Within Building	33	25	22	27	*3.67	0.16

Sample Size 28%

ANALYSIS BY BUILDING SIZE - Over 20,000sq ft
Test
CHI SQ x 2
0.95 (5) = 1.145

Design Features	GB Good	GB Poor	20,000+ Good	20,000+ Poor	Chi-Sq Good	Chi-Sq Poor
Internal Entrance Hall	53	13	55	12	0.08	0.08
Lift Capacity	50	12	54	7	0.32	*2.08
Lift Performance	43	22	46	18	0.21	0.73
Artificial Lighting	56	8	57	9	0.02	0.13
Natural Daylight	49	16	49	16	0.00	0.00
Heating	36	18	38	14	0.11	0.89
Internal Envirn. Cont.	26	32	24	36	0.15	0.50
Carpet/Flooring	49	19	51	20	0.08	0.05
Provis. for Cable Trunk.	40	32	41	34	0.03	0.13
Ceiling Design	41	13	36	16	0.61	0.69
Toilets	45	18	45	16	0.00	0.22
Kitchen Cater. Facilits.	37	36	50	30	*4.57	1.00
Signs Within Building	33	25	36	14	0.27	*4.84

Sample Size 36%

NB: * = Statistically Significant

8.4.1 Rental Value

By dividing the data into rental bands (as at 1985) of under £10 per sq ft, £10-15, £15-20 and over £20 per sq ft, the data was disaggregated. With the exception of the data value for under £10 per sq ft, the sample size was not large enough to produce reliable results.

For this lower rental value end of the market, the Lift Capacity and Performance was significantly worse yet the Natural Daylight was regarded as better than the national average.

Table 8.4.1 (Part I) implies that buildings valued at between £10-15 per sq ft in 1985 have a number of areas of inadequate design.

Tables 8.4.1 (Part II) shows the opposite. Many of the design categories were rated as better than the national average. As mentioned, even by adding these two tables together the sub-sample would still only represent 10% of the total sample; a size not sufficiently large enough to produce a statistically reliable result although the tests produced significant results in terms of the chi-squared test.

Table 8.4.1
ANALYSIS BY RENTAL VALUE (PART I) - Less than £10 per sq ft
Test
CHI SQ x 2
0.95 (5) = 1.145

	GB	GB	- 10	- 10	Chi-Sq	Chi-Sq
Design Features	Good	Poor	Good	Poor	Good	Poor
Internal Entrance Hall	53	13	55	33	0.08	*30.77
Lift Capacity	50	12	35	10	*4.50	0.33
Lift Performance	43	22	28	10	*5.23	*6.55
Artificial Lighting	56	8	59	9	0.16	0.50
Natural Daylight	49	16	52	12	0.18	*1.00
Heating	36	18	36	19	0.00	0.06
Internal Envirn. Cont.	26	32	28	32	0.15	0.00
Carpet/Flooring	49	19	52	18	0.18	0.05
Provis. for Cable Trunk.	40	32	41	28	0.03	0.50
Ceiling Design	41	13	47	11	0.88	0.31
Toilets	45	18	45	15	0.00	0.50
Kitchen Cater. Facilits.	37	36	35	36	0.11	0.00
Signs Within Building	33	25	28	21	0.76	0.64

Sample Size 71%

ANALYSIS BY RENTAL VALUE (PART I) - £10-15 per sq ft
Test
CHI SQ x 2
0.95 (5) = 1.145

	GB	GB	10-15	10-15	Chi-Sq	Chi-Sq
Design Features	Good	Poor	Good	Poor	Good	Poor
Internal Entrance Hall	53	13	44	11	*1.53	0.31
Lift Capacity	50	12	38	7	*2.88	*2.08
Lift Performance	43	22	38	18	0.58	0.73
Artificial Lighting	56	8	51	8	0.45	0.00
Natural Daylight	49	16	44	21	0.51	*1.56
Heating	36	18	31	16	0.69	0.22
Internal Envirn. Cont.	26	32	16	28	*3.85	0.50
Carpet/Flooring	49	19	46	20	0.18	0.05
Provis. for Cable Trunk.	40	32	30	44	*2.50	*1.50
Ceiling Design	41	13	28	16	*4.12	0.69
Toilets	45	18	46	21	0.02	0.50
Kitchen Cater. Facilits.	37	36	19	36	*8.76	0.00
Signs Within Building	33	25	23	20	*3.03	*1.00

Sample Size 9%

NB : * = Statistically Significant

Table 8.4.1
ANALYSIS BY RENTAL VALUE (PART II) - £15-20 per sq ft
Test
CHI SQ x 2
0.95 (5) = 1.145

	GB	GB	15-20	15-20	Chi-Sq	Chi-Sq
Design Features	Good	Poor	Good	Poor	Good	Poor
Internal Entrance Hall	53	13	53	20	0.00	*3.77
Lift Capacity	50	12	60	7	*2.00	*2.08
Lift Performance	43	22	60	20	*6.72	0.18
Artificial Lighting	56	8	47	20	*1.45	*18.00
Natural Daylight	49	16	47	27	0.08	*7.56
Heating	36	18	50	20	*5.44	0.22
Internal Envirn. Cont.	26	32	33	47	*1.88	*7.03
Carpet/Flooring	49	19	33	33	*5.22	*10.32
Provis. for Cable Trunk.	40	32	53	27	*4.22	0.78
Ceiling Design	41	13	40	13	0.02	0.00
Toilets	45	18	33	20	*3.20	0.22
Kitchen Cater. Facilits.	37	36	33	33	0.43	0.25
Signs Within Building	33	25	27	33	1.09	*2.56

Sample Size 7%

ANALYSIS BY RENTAL VALUE (PART II) - £20+ per sq ft
Test
CHI SQ x 2
0.95 (5) = 1.145

	GB	GB	+ 20	+ 20	Chi-Sq	Chi-Sq
Design Features	Good	Poor	Good	Poor	Good	Poor
Internal Entrance Hall	53	13	80	0	*13.75	*13.00
Lift Capacity	50	12	40	20	*2.00	*5.33
Lift Performance	43	22	20	40	*12.30	*14.73
Artificial Lighting	56	8	60	8	0.29	*8.00
Natural Daylight	49	16	40	0	*1.65	*16.00
Heating	36	18	60	0	*16.00	*18.00
Internal Envirn. Cont.	26	32	60	0	*44.46	*32.00
Carpet/Flooring	49	19	60	0	*2.47	*19.00
Provis. for Cable Trunk.	40	32	80	0	*40.00	*32.00
Ceiling Design	41	13	60	20	*8.80	*3.77
Toilets	45	18	40	20	0.56	0.22
Kitchen Cater. Facilits.	37	36	60	40	*14.30	0.44
Signs Within Building	33	25	40	0	*1.48	*25.00

Sample Size 3%

NB : * = Statistically Significant

8.5.1 Business Sectors

Within this disaggregation the results for the Manufacturing sector (Table 8.5.1) were too small to be reliable and those of the Computer/Electronic sector, only just about large enough to be reliable.

Table 8.5.1 shows that the Computer/Electronics sector regard the Internal Entrance hall, Lift Capacity and Performance, Artificial Light, Heating, Toilets, Kitchen/Catering Facilities and Signs all as adequate.

Table 8.5.1 reveals that, with the exception of the Internal Environmental Control, Ceilings and Toilets, all the design areas in the Financial Sector were equal or better than the result for the nation as a whole.

Table 8.5.1 relating to the Professional Services shows that the Lift Capacity and Performance, Artificial and Daylight, Cable Trunking and Signs were all worse than the national results. The Internal Entrance, on the other hand, was regarded better than the national results.

Table 8.5.1
ANALYSIS BY BUSINESS SECTOR (PART I) - Computer/Electronic
Test
CHI SQ x 2
0.95 (5) = 1.145

Design Features	GB Good	GB Poor	Com/El Good	Com/El Poor	Chi-Sq Good	Chi-Sq Poor
Internal Entrance Hall	53	13	32	25	*8.32	*11.08
Lift Capacity	50	12	25	11	*12.50	0.08
Lift Performance	43	22	21	21	*11.26	0.05
Artificial Lighting	56	8	46	11	*1.79	1.12
Natural Daylight	49	16	43	25	0.73	*5.06
Heating	36	18	25	18	*3.36	0.00
Internal Envirn. Cont.	26	32	29	29	0.35	0.28
Carpet/Flooring	49	19	50	21	0.02	0.21
Provis. for Cable Trunk.	40	32	43	25	0.22	*1.53
Ceiling Design	41	13	36	4	0.61	*6.23
Toilets	45	18	36	14	*1.80	0.89
Kitchen Cater. Facilits.	37	36	25	36	*3.89	0.00
Signs Within Building	33	25	14	21	*10.94	0.64

ANALYSIS BY BUSINESS SECTOR (PART I) - Finance
Test
CHI SQ x 2
0.95 (5) = 1.145

Design Features	GB Good	GB Poor	Finance Good	Finance Poor	Chi-Sq Good	Chi-Sq Poor
Internal Entrance Hall	53	13	54	11	0.02	0.31
Lift Capacity	50	12	44	6	0.72	*3.00
Lift Performance	43	22	43	16	0.00	*1.64
Artificial Lighting	56	8	56	5	0.00	*1.12
Natural Daylight	49	16	51	13	0.08	0.56
Heating	36	18	37	14	0.03	0.89
Internal Envirn. Cont.	26	32	19	33	*1.88	0.03
Carpet/Flooring	49	19	43	13	0.73	0.21
Provis. for Cable Trunk.	40	32	41	33	0.03	0.03
Ceiling Design	41	13	44	17	0.22	*1.23
Toilets	45	18	49	21	0.36	0.50
Kitchen Cater. Facilits.	37	36	35	44	0.11	*1.78
Signs Within Building	33	25	32	21	0.03	0.64

NB : * = Statistically Significant

Table 8.5.1
ANALYSIS BY BUSINESS SECTOR (PART II) - Manufacturing
Test
CHI SQ x 2
0.95 (5) = 1.145

Design Features	GB Good	GB Poor	Manu Good	Manu Poor	Chi-Sq Good	Chi-Sq Poor
Internal Entrance Hall	53	13	45	9	*1.21	*1.23
Lift Capacity	50	12	55	0	0.50	*12.00
Lift Performance	43	22	45	0	0.09	*22.00
Artificial Lighting	56	8	64	9	*1.14	0.13
Natural Daylight	49	16	73	0	*11.76	*16.00
Heating	36	18	55	27	*10.03	*4.50
Internal Envirn. Cont.	26	32	36	18	*3.85	*6.13
Carpet/Flooring	49	19	45	27	0.33	*3.37
Provis. for Cable Trunk.	40	32	55	18	*5.63	*6.13
Ceiling Design	41	13	45	9	0.39	*1.23
Toilets	45	18	55	18	*2.22	0.00
Kitchen Cater. Facilits.	37	36	55	27	*8.76	*2.25
Signs Within Building	33	25	18	18	*6.82	*1.96

ANALYSIS BY BUSINESS SECTOR (PART II) - Professional Sector
Test
CHI SQ x 2
0.95 (5) = 1.145

Design Features	GB Good	GB Poor	Prof Good	Prof Poor	Chi-Sq Good	Chi-Sq Poor
Internal Entrance Hall	53	13	63	8	*1.89	*1.92
Lift Capacity	50	12	33	10	*5.78	0.33
Lift Performance	43	22	23	31	*9.30	*3.68
Artificial Lighting	56	8	60	13	0.29	*3.13
Natural Daylight	49	16	48	21	0.02	*1.56
Heating	36	18	35	21	0.03	0.50
Internal Envirn. Cont.	26	32	23	33	0.35	0.03
Carpet/Flooring	49	19	52	17	0.18	0.21
Provis. for Cable Trunk.	40	32	35	44	0.63	*4.50
Ceiling Design	41	13	40	15	0.02	0.31
Toilets	45	18	48	15	0.20	0.50
Kitchen Cater. Facilits.	37	36	42	29	0.68	*1.36
Signs Within Building	33	25	29	19	0.48	*1.44

NB : * = Statistically Significant

8.6 User of Premises

These results reveal that Headquarters buildings have inadequate Lifts in terms of both their Capacity and their Performance. The Heating arrangements, on the other hand, are regarded as better than the national results. From these results it would appear that the Computer/Electronic Sector is far more critical of building design with 8 out of 13 design areas being regarded as statistically unsatisfactory.

Table 8.6.1 reveals that many areas of office buildings used for Administration purposes are better than the occupier expects them to be. The danger with these figures is that they represent only 8% of the sample and therefore the results may not be reliable.

The results from the Regional/Branch office data also reveals inadequate Lifts in Performance and Capacity but the Heating systems are also regarded as inadequate and more rate the Cable Trunking as poor.

Table 8.6.1
ANALYSIS BY USE OF PREMISES - Headquarters
Test
CHI SQ x 2
0.95 (5) = 1.145

	GB	GB	HQ	HQ	Chi-Sq	Chi-Sq
Design Features	Good	Poor	Good	Poor	Good	Poor
Internal Entrance Hall	53	13	48	13	0.47	0.00
Lift Capacity	50	12	36	8	*3.92	*1.33
Lift Performance	43	22	32	19	*2.81	0.41
Artificial Lighting	56	8	54	9	0.07	0.13
Natural Daylight	49	16	45	16	0.33	0.00
Heating	36	18	43	21	*1.36	0.50
Internal Envirn. Cont.	26	32	26	31	0.00	0.03
Carpet/Flooring	49	19	46	22	0.18	0.47
Provis. for Cable Trunk.	40	32	39	28	0.03	0.50
Ceiling Design	41	13	42	13	0.02	0.00
Toilets	45	18	42	19	0.20	0.06
Kitchen Cater. Facilits.	37	36	43	29	0.97	*1.36
Signs Within Building	33	25	27	20	1.09	*1.00

ANALYSIS BY USE OF PREMISES - Administration
Test
CHI SQ x 2
0.95 (5) = 1.145

	GB	GB	Admin	Admin	Chi-Sq	Chi-Sq
Design Features	Good	Poor	Good	Poor	Good	Poor
Internal Entrance Hall	53	13	47	6	0.68	*3.77
Lift Capacity	50	12	65	6	*4.50	*3.00
Lift Performance	43	22	59	12	*5.95	*4.55
Artificial Lighting	56	8	47	6	*1.45	0.50
Natural Daylight	49	16	59	6	*2.04	*6.25
Heating	36	18	35	18	0.03	0.00
Internal Envirn. Cont.	26	32	35	29	*3.12	0.28
Carpet/Flooring	49	19	47	24	0.08	*1.32
Provis. for Cable Trunk.	40	32	35	29	0.63	0.28
Ceiling Design	41	13	18	18	*12.90	*1.92
Toilets	45	18	41	18	0.36	0.00
Kitchen Cater. Facilits.	37	36	12	71	*16.89	*34.03
Signs Within Building	33	25	12	24	*13.36	0.04

ANALYSIS BY USE OF PREMISES - Regional/Branch
Test
CHI SQ x 2
0.95 (5) = 1.145

	GB	GB	Reg	Reg	Chi-Sq	Chi-Sq
Design Features	Good	Poor	Good	Poor	Good	Poor
Internal Entrance Hall	53	13	58	14	0.47	0.08
Lift Capacity	50	12	35	10	*1.50	0.33
Lift Performance	43	22	28	16	*5.23	*1.64
Artificial Lighting	56	8	58	6	0.07	0.50
Natural Daylight	49	16	50	17	0.02	0.06
Heating	36	18	25	15	*3.36	0.50
Internal Envirn. Cont.	26	32	23	32	0.35	0.00
Carpet/Flooring	49	19	51	15	0.08	0.84
Provis. for Cable Trunk.	40	32	40	38	0.00	*1.12
Ceiling Design	41	13	44	11	0.22	0.31
Toilets	45	18	47	16	0.09	0.22
Kitchen Cater. Facilits.	37	36	33	35	0.43	0.03
Signs Within Building	33	25	30	22	0.27	0.36

8.7 Disaggregated Analysis of the National Office Design Survey as previously explained, the results of the 1985 survey were not adequate in a number of respects, especially those questions relating to car parking and its importance within the design hierarchy of office buildings. The National Office Design survey was posted out, as previously explained, to those who had taken part in the original survey.

The results of the follow up 1986 postal questionnaires were disaggregated into various categories to test Hypothesis II. Due to the number of returns it was, as with the original survey, not sensible to disaggregate into economic regions as the sample size became so small as to be statistically unreliable. However, the following disaggregations were used although it is agreed that disaggregation of 73 questionnaires in this way produces results which may be misleading:

Regions:	South = South East, South West and East Anglia Midland = East and West Midlands and Wales North = North West, North, Yorkshire, Humberside and Scotland
Area:	0-5,000sq ft, 5-20,000sq ft, 20,000sq ft
Businesses:	Computer/Electronic, Financial Services, Manufacturing, and Other (eg. Leisure, Professional Services)
Rent:	£0-10 psf, £10-15 psf, £15-20 psf, £20+ psf
Premises:	Administration, Branch, Headquarters
Premises:	Single-let, multi-let
Date of Construction:	Pre-1980, Post-1980
Amenities:	Depending whether in the first survey the tenant classified the amenities as Good, Satisfactory, Poor in the 1985 survey.
Shell/ Non-Shell:	Depending on the tenants preference for a completed or shell building in the 1985 survey.

The commentary which follows points to a few factors which may be important, but as explained, the statistical significance is doubtful due to the sample size of the data.

8.7.1 Internal Environmental Control

This aspect of design appeared far more important for Computer/Electronic tenants. There are also signs that those tenants who regarded the Internal Amenities as poor place more importance on this aspect of design as do tenants in larger office buildings. For Professional Services this aspect is less important.

8.7.2 Heating System

Although Heating was ranked second there was not much of a disparity throughout the sample. However, Manufacturers seemed to think it more important although the small sample size may mislead in this respect. Administration buildings also thought it more important whilst Headquarters buildings regarded it as less important.

8.7.3 Car Parking

The original 1985 National Office Survey revealed that 58% of office tenants regarded Car Parking for staff as poor. This was despite tenants ranking it only fourth in importance, after the flexibility of the structure, internal amenities and external appearance. This later survey revealed that car parking is one of the most important for most tenants, but even more important for Computer/Electronic companies.

8.7.4 Quality of Internal Finishes

This was ranked 4th for GB as a whole but once again was more important to the Computer/Electronics tenants.

However, it was less important for offices valued at more than £20 per sq ft per annum. According to whether the tenant thought his building was good, satisfactory or poor, in the original 1985 National Office Survey, this aspect of design declined in importance the worse the tenant viewed his overall amenities.

8.7.5 Security

It is notable that those tenants who preferred a completed building, ranked security as more important than those who preferred a shell and core structure to fit out themselves. The Computer/Electronic companies ranked this aspect as less important than the average tenant, whilst Professional Services regarded it as more important.

It was also considered more important for those tenants who felt their overall Internal Amenities were "good".

8.7.6 Provision for Cable Trunking

This design aspect appears to be more important for tenants in the southern part of the country. There has also appeared to be a correlation between rental value and this area of design with the more valuable buildings regarding it as more important. Perhaps not surprisingly, the Computer/Electronic tenants regard it as more important whilst Professional Services less important. Tenants in single let buildings also regard it as more important.

8.7.7 Toilet Facilities

Throughout the disaggregated data the result was very consistent. Due to the sample size the results are of limited meaning but it does appear to show that there is no difference of opinion on the design of the Toilet facilities in the various subsectors.

8.7.8 Lift Performance/Reliability

Although ranked 8th, this aspect of design did produce varying results. The small size of the sample may be misleading, but tenants renting at more than £20 per sq ft per annum regarded it as more important.

The Computer/Electronic companies regarded it as less important whilst Financial Service companies thought it more important. This difference may partially be explained by the fact that some low rise "high tech" buildings sometimes occupied by Computer/Electronic companies have no lift facilities.

8.7.9 Entrance Hall

Entrance halls are architecturally thought to be the most important area of design. As with the External Appearance, it is very likely that many tenants only sub-consciously value such facilities. The survey found it to be more important for tenants paying between £15-20 per sq ft. The main difference came in the shell/no shell analysis with tenants who preferred to fit out a shell building regarding the entrance as less important.

8.7.10 Kitchen/Catering Facilities

In the earlier survey, this aspect of design was ranked surprisingly highly. This latest survey reveals it to be less important. However, although only a small sample of 4 tenants, those paying more than £20 per sq ft, regard it as far more important than the average tenant. As previously explained 4 tenants are not statistically indicative of the market as a whole.

8.8.0 Conclusion

This chapter has been concerned with Hypothesis II, that different subsectors within the office market have different levels of satisfaction with different aspects of building design.

The results confirm the hypothesis. The implication for office developers and investors is that far more knowledge is necessary to prevent the design mistakes of the past being repeated. In assessing the investment financial implications, it is clear that different submarkets need to be analysed differently which has implications for the Property Investment Design Appraisal Model put forward in Chapter 12.

Chapter 9

RENTAL VALUE, AGE AND BUILDING DESIGN

Chapter 9

RENTAL VALUE, AGE AND BUILDING DESIGN

9.0

Hypothesis III briefly stated is that older buildings have a lower rental value because design is inadequate. This clearly has implications for all buildings because, if newer buildings have the same design inadequacies found more commonly in older buildings, they too are likely to suffer in terms of rental value.

The original National Office Survey aimed to interview tenants who had taken new leases in the 2-3 year period prior to 1985. Some of these leases were for existing buildings, not necessarily newly constructed premises. One of the subsectors analysed in this survey examined the data by age of building if less than 30 years old. The problem was that, to divide the data into actual year of construction was both difficult, because the exact date in many cases was not known, and would be unreliable because the data per year would produce an inadequate sample size.

Three categories were chosen: pre 1970 (13%), 1970-1980 (25%) and post 1980 (62%). The database for pre 1970s buildings was regarded as just adequate for statistical analysis.

9.1 Age of Buildings

Table 9.1.1 looked at the four main design areas: structure/shape, car parking, external appearance and internal amenities. Hypothesis III suggesting that older buildings have poorer design, did not clearly emerge from this analysis with two exceptions. The External

Appearance was regarded as good by only 47% of tenants in buildings built before 1970 compared with 73% for buildings built post 1980. The other major difference related to Internal Amenities where only 20% of tenants in pre 1970 buildings regard them as good. Buildings built between 1971 - 1980 get the highest rating at 46%, regarding this area of design as good.

Table 9.1.2 demonstrates by comparing the results for the average in Great Britain that statistically the internal design of buildings was regarded as far less satisfactory for older buildings. For those built or substantially refurbished before 1970, almost every area of design is regarded as inadequate. Some categories such as Internal Environmental Control or the Provision of Cable Trunking facilities are regarded as particularly inadequate.

The findings relating to age and design are re-examined in the section which follows. The results also reveal a converse fact; the Heating System in older buildings is regarded as better than in newer buildings. With buildings constructed since 1980 the Ceiling appears to be regarded as significantly better than the average results.

This analysis supports Hypothesis III that older buildings are less satisfactory than newer buildings but only in certain areas of design; it is the Internal Amenities which are less satisfactory, as is the External Appearance.

Table 9.1.2
ANALYSIS BY AGE AND BUILDING INTERNAL DESIGN - Pre 1970
Test
CHI SQ x 2
0.95 (5) = 1.145

	GB	GB	- 1970	- 1970	Chi-Sq	Chi-Sq
Design Features	Good	Poor	Good	Poor	Good	Poor
Internal Entrance Hall	53	13	37	13	*4.83	0.00
Lift Capacity	50	12	37	13	*3.38	0.08
Lift Performance	43	22	33	3	*2.33	*16.41
Artificial Lighting	56	8	40	3	*4.57	*3.13
Natural Daylight	49	16	50	13	0.02	0.56
Heating	36	18	43	27	*1.36	*4.50
Internal Envirn. Cont.	26	32	13	37	*6.50	0.78
Carpet/Flooring	49	19	50	13	0.02	*1.89
Provis. for Cable Trunk.	40	32	20	47	*10.00	*7.03
Ceiling Design	41	13	27	20	*4.78	*3.77
Toilets	45	18	33	20	*3.20	0.22
Kitchen Cater. Facilits.	37	36	30	40	*1.32	0.44
Signs Within Building	33	25	23	17	*3.03	*2.56

ANALYSIS BY AGE AND BUILDING INTERNAL DESIGN - 1971-1980
Test
CHI SQ x 2
0.95 (5) = 1.145

	GB	GB	'70-'80	'70-'80	Chi-Sq	Chi-Sq
Design Features	Good	Poor	Good	Poor	Good	Poor
Internal Entrance Hall	53	13	54	8	0.02	*1.92
Lift Capacity	50	12	38	8	*2.88	*1.33
Lift Performance	43	22	42	18	0.02	0.73
Artificial Lighting	56	8	48	10	*1.14	0.50
Natural Daylight	49	16	44	18	0.51	0.25
Heating	36	18	34	16	0.11	0.22
Internal Envirn. Cont.	26	32	20	28	*1.38	0.50
Carpet/Flooring	49	19	46	22	0.18	0.47
Provis. for Cable Trunk.	40	32	36	38	0.40	1.12
Ceiling Design	41	13	26	18	*5.49	*1.92
Toilets	45	18	44	22	0.02	0.89
Kitchen Cater. Facilits.	37	36	44	36	*1.32	0.00
Signs Within Building	33	25	22	18	*3.67	1.96

ANALYSIS BY AGE AND BUILDING INTERNAL DESIGN - Post 1980
Test
CHI SQ x 2
0.95 (5) = 1.145

	GB	GB	+ 1980	+ 1980	Chi-Sq	Chi-Sq
Design Features	Good	Poor	Good	Poor	Good	Poor
Internal Entrance Hall	53	13	55	15	0.08	0.31
Lift Capacity	50	12	39	8	*2.42	*1.33
Lift Performance	43	22	30	20	*3.93	0.18
Artificial Lighting	56	8	63	8	0.88	0.00
Natural Daylight	49	16	50	15	0.02	0.06
Heating	36	18	34	17	0.11	0.06
Internal Envirn. Cont.	26	32	31	31	0.96	0.03
Carpet/Flooring	49	19	50	20	0.02	0.05
Provis. for Cable Trunk.	40	32	45	27	0.63	0.78
Ceiling Design	41	13	50	9	*1.98	*1.23
Toilets	45	18	47	15	0.09	0.50
Kitchen Cater. Facilits.	37	36	36	34	0.03	0.11
Signs Within Building	33	25	30	23	0.27	0.16

NB : * = Statistically Significant

As far as Hypothesis III is concerned, very little meaningful data emerged from the survey to clarify the financial (rental) relationship between building age and design which would have clarified the relationship between design and cost-in-use.

9.3 Design, Rental Value and the National Office Design Survey

The postal National Office Design Survey questionnaire in 1986 attempted to find out from tenants how different aspects of design influenced rental value. When rent reviews are undertaken, and in particular when arbitration is involved or a rent is settled with the help of an independent surveyor, it is common for a tenant to claim poor design as one reason why an office rent should be lower than comparable rents for similar buildings. Indeed it is sometimes possible to use comparable rental evidence to identify design problem areas. A particular building might not let or might let at low rent due to design defects, as is explored with three actual buildings in Chapter 10.

In the survey tenants gave the following response when asked which areas influenced rental value. It should be noted that, of the 77 questionnaires returned, some did not answer "Yes" to any of these categories.

Table 9.3.1

Aspects of Influencing Rental Value	Rank	Percentage Yes
Lift Performance/Reliability	7	13.0
Internal Environmental Control (ie air conditioning, solar protection, ventilation)	1	50.6
Heating System	= 5	15.6
Provision for Cable Trunking (ie raised floor/ducting)	= 5	15.6
Arrangement for Kitchen/Catering Facilities	10	2.6
Improved Car Parking	2	44.2
External Appearance of Building	4	26.0
Quality of Internal Finishes	3	36.4
Toilet Facilities	11	0
Security	9	5.2
Entrance Hall	8	10.4

These figures, despite the low response, are revealing about tenants' attitude to design and rental value. On the other hand the fact that no tenants regard Toilets as important is surprising because office letting agents claim it is often easier to let office buildings with good Toilet facilities. However, Internal Environmental Control and Car Parking are both important, as is the result relating to the quality of Internal Amenities.

It is notable to find External Appearance as the 4th most important design aspect influencing rent, bearing in mind that tenants regard this area of design as least important of the eleven design categories.

The Heating System and Cable Trunking are ranked equal 5th. The original 1985 survey gave the impression that these two items are important. However, there is clearly a difference between asking a tenant to rate an aspect of design as "good, satisfactory, or poor" on the one hand, and on the other asking "which aspects of design influences rental value". In other words, a feature of design may be deliberately poor in design because an office developer does not believe it to be important in terms of market value.

The four remaining areas of design; Lift Performance, Entrance Hall, Security and Kitchen arrangements and Toilet facilities all accord with the earlier part of the survey which ranks these as 5 or worse in terms of importance.

By disaggregating the information, a greater number of responses were received from the Southern Region and from Financial Services tenants paying less than £10 per sq ft in larger Headquarters buildings. A high percentage of tenants who rated design as "satisfactory" in the last survey responded to this part of the questionnaire.

Whereas the results of Table 9.1.1 indicate that Internal Environmental Control and Cable Trunking are particularly inadequate in older buildings, the results in Table 9.3.1 draw attention to both Car Parking and External Appearance as being important.

9.4 Design and Rental Values : Additional Questions

The final questions related to raised floors, better design, better management and the quality of future management and choice of office building.

Whilst only 35% were concerned with a raised floor, 55% of the sample indicated they would pay more for a better designed building.

However, the question relating to paying a higher management bill for a better designed building was mis-understood as being ambigious by many respondents and therefore the result of 40% may not be accurate (was management concerned with managing the construction or day to day management when complete?) What was surprising is that 83% of office tenants claim that they would be influenced by the building's management when they next take an office building. Herein lies a problem with this type of research. Whilst the intention was to understand tenant's views on a day to day management of existing buildings, it appears that some tenants thought the question related to the management of a new building's construction. These results must therefore be interpreted with caution as they are not necessarily indicative of the views of the sample interviewees or the office market tenants generally within Great Britain.

9.5 Office Rents and Building Age

One of the findings, as previously explained, from the disaggregated results of the National Office Survey was that there appeared to be a relationship between the office tenants level of satisfaction with internal design and the age of the building.

The following results test the Hypothesis III that older buildings have a lower rental value. In the Discussion of Results in Chapter 11, these findings are examined to see whether it can be concluded that older buildings have a lower rental value because they have a lower level of design. Section 9.6 and 9.7 which follow examine the relationship between the age of the buildings and their rental value.

9.6 The Guildford Office Market

The first set of results relate to Guildford. As explained in the Methodology, the writer obtained the rental values using the "Focus" on-line database system of a group of office buildings in Guildford for the year mid 1986 to 1987. Focus is a database which records all known (published) information on the property market. From these results the total rental value was divided by the net known floor area to arrive at the annual rental value per unit area; ie rent per sq ft. As previously explained to obtain reliable data in the property market, whilst Guildford is a relatively discreet market, only 12 pieces of rental evidence were available. It is realised that, as a statistical sample the size of data is not very reliable.

These results were analysed to calculate the rent paid as a percentage of the highest rental value during that same time period, (commonly referred to as the prime rent). At that time the highest rent achieved in the market was £14.55 for Leys Road on Woodbridge Road. It is worth noting that, although rental values have not grown significantly in the previous 5 years in Guildford, in the 12 months following this survey the top rent achieved in Guildford increased dramatically to more than £20 per sq ft; an increase of more than 33% in one year.

The next problem was to calculate the age of each building for which rental value had been obtained. Whilst the writer knew of the age of one or two of the buildings, the District Valuers Office was approached where a personal contact was able to provide the following information. The District Valuer is the government department by which local and national government obtains data relating to property rental and capital values. This may be needed for a variety of purposes including compulsory purchase, capital gains taxation or rating value assessments.

The writer was able to obtain the year during which each building first appeared on the rating valuation list. In other words, this date was taken as the year in which the building was completed and made available to the property market.

The problem with this method of collecting data is that resources and records do not permit the writer to establish whether that was the date the new building was completed or refurbished. If the latter were applicable then the extent of the refurbishment would be important. It also does not enable the writer to know whether each building was let immediately on completion or whether there was a delay of a year or more before the building was let and eventually entered on to the rating valuation list.

Despite the potential problems, the data was considered sufficiently reliable to be used to plot the regression correlation co-efficient.

From the data a regression correlation of co-efficient (r) of 0.7731 was found between the percentage of top rental value and the age of the building with $y = 80 - 1.33x$.

The explanation of this regression co-efficient $(r)^2$ is 0.5976.

This implies that almost 60% of the reason for the rental value falling can be attributed to the age of buildings. 40% of the reason for the decline in value is attributable to other factors which are unknown. Analysis of the results, t = 1.04. For t 0.20 (10) = 0.879, implying statistical significance but at 0.20 degrees of freedom.

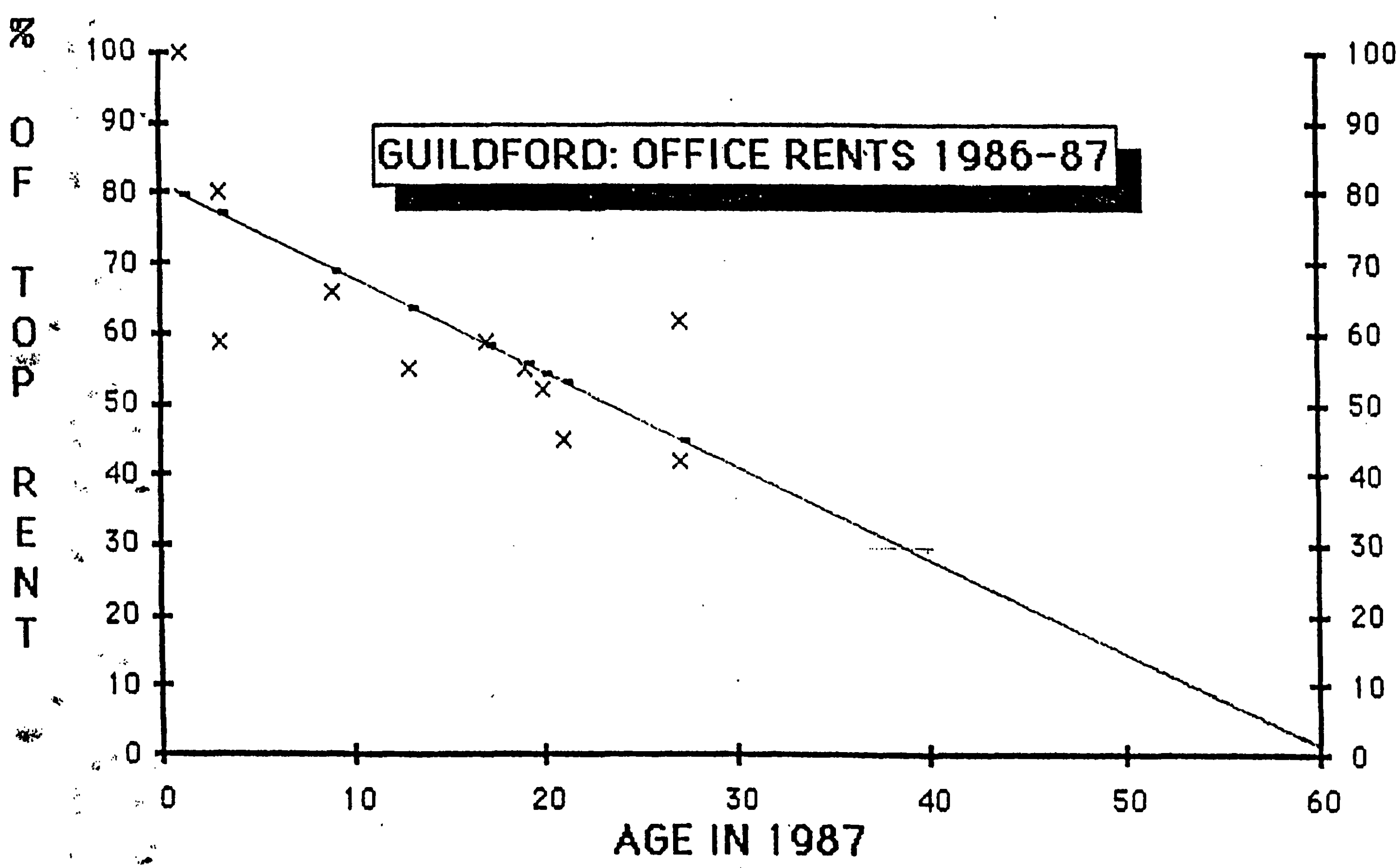
From this analysis it implies, if there is a relationship between rental value and age, that an office building and land would have a zero value when it was 60 years old. This is clearly unrealistic as, apart from the most exceptional circumstances, all buildings have a value of some description, even if it only relates to the land value on which the building stands rather than the value of the land plus the building value. This is an area which clearly needs further research. However these results do imply that design is one of the reasons why older buildings have a lower value. It is known from the National Office Survey that older buildings have a less satisfactory design. The same analysis above was undertaken using a national sample of rental data.

Table 9.6.1
Guildford : Office Rents 1986-1987 and Building Age

Address	Rent per sq foot	% of top rent	Approx date of first letting	Age at 1987 (yrs)
32 High Street	£8.61	59%	1970	17
98/110 High Street	£8.52	59%	1984	3
Leys House, Woodbridge Road	£14.55 (top rent)	100%	1986	1
Beaufort House The Bars Chertsey Street	£11.56	80%	1984	3
66/68 Chertsey Street	£7.95	55%	1974	13
Millbrook House 28/30 High Street	£7.97	55%	1968	19
Hays Wharf, Millmead	£11.50	80%	1984	3
70/72 Chertsey Street	£9.70	66%	1978	9
Alexandra House Alexandra Terrace	£7.58	52%	1967	20
Seiko House 170 Walnut Tree Close	£6.50	45%	1966	21
Wallis House, 76 North Street	£6.10	42%	1960	27
64 North Street	£8.96	62%	1960	27

Average 62.9%
St. Dev. 16.5%

GRAPH 9.6.1



GUILDFORD: OFFICE RENTS 1986-87
% OF TOP RENT
AGE IN 1987
0
10
20
30
40
50
60
70
80
90
100

9.7 The National Office Market

A further analysis similar to that undertaken at Guildford was undertaken of national rental values. The method used to obtain data was to examine a larger number of property portfolios for which Healey & Baker either valued or was actively involved with. One of the processes, as the reader will be aware, which must be undertaken with such valuation work, is to establish the Estimated Rental Value (ERV) of the building, on the basis that the same building could be available to let on the open market between a willing landlord to a willing tenant as at the date of the valuation.

For the year 1987, 43 office properties were identified in a variety of portfolios largely owned by pension funds or life insurance companies as investments. From these the total Estimated Rental Value and the net lettable floor area was obtained from which the per square foot per annum could be obtained. From the Healey & Baker PRIME rental survey conducted every six months, the prime rent was obtained for the same location/town within which the property was situated. From this information it was then possible to calculate the Estimated Rental Value as a percentage of the prime rental value.

The major difference with this data compared with the Guildford data, is that the Guildford data related to rents agreed in the market rather than ERVs.

From the portfolio data, and from other records, it was possible to find out when the building was first let following construction or substantial reconstruction. In some cases this was difficult with properties more than 25 years old such as buildings in Edinburgh and

London's West End which have historic "value" due to their location.

With this data (see Table 9.7.1) it was possible to calculate the regression correlation co-efficient of the percentage of rental value against building age. This produced the regression co-efficient of 0.54 which produced the regression co-efficient R squared = 0.292.

This implied that age only statistically accounts for one third of the reason for a buildings fall in rent. In other words, although there is a relationship between age and rental value, on a straight line basis the relationsip is not particularly strong.

The standard error of this data was also calculated as being 16.054 implying that the variance or standard deviation around the regression shows 68% of the results are within +/- 16.054% of the regression line, a not particularly strong statistical fit.

To calculate a more complex non linear relationship between rental value and age is theoretically possible, but would need considerable amounts of additional data which is almost impossible to obtain before it could be completed.

From this analysis there is clearly a relationship between rental value and building age. However with R squared of only 0.292 the relationship is statistically not very significant. What can be said is that, based on the findings of the National Office Survey which showed design in older buildings to be less satisfactory, poor design is having an adverse effect on rental value in some cases.

To arrive at R squared = 0.292 the equation calculated is:

$$y = 88.67 - 1.156x$$

It is important to note that this equation was calculated at one point in time (1986/7). This result will not necessarily hold good at different periods of time. It is possible that at a time like 1988 when the office market was "booming" there is less of a correlation between age and rental value and the slope of the line was greater than -1.156. In other words the relationship between age and rental value is stronger when the market is in a state of oversupply and poor demand. When the converse applies, and little supply is available in the face of excess demand, any office building will let at a full rent despite the poor design of individual buildings.

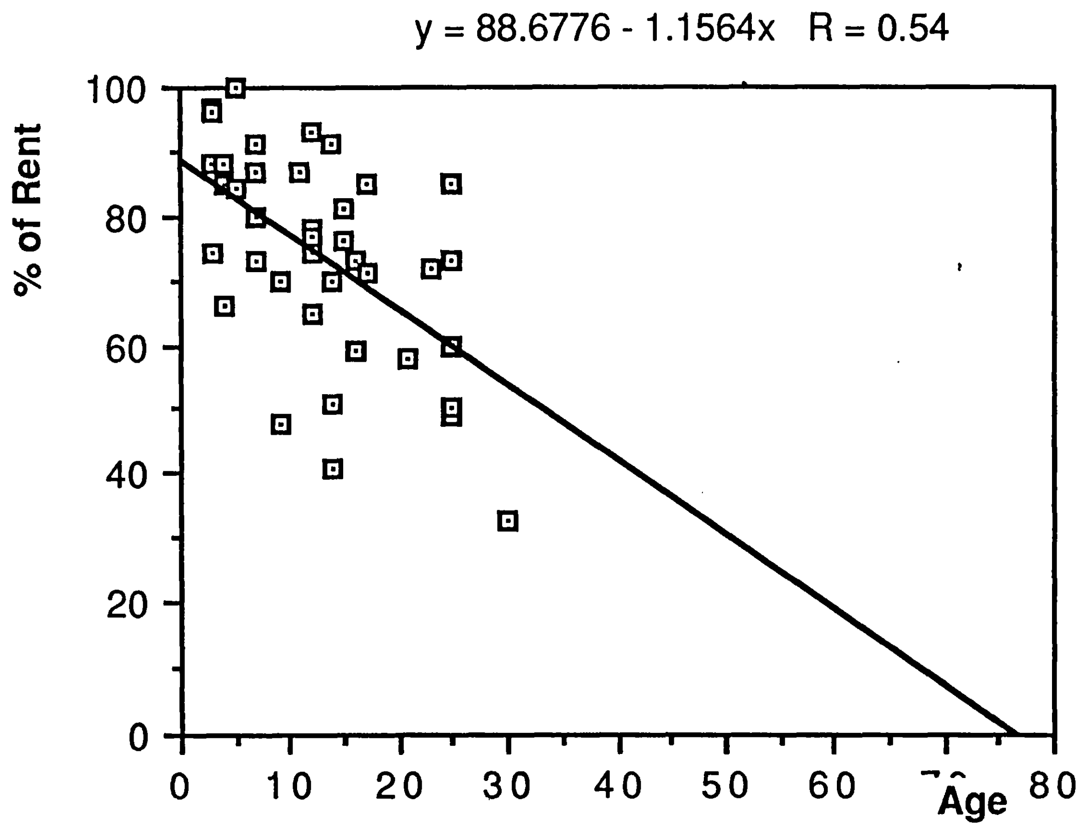
Table 9.7.1
Great Britain : Office Rents 1986-87 and Building Age

Address	Area	ERV	Rent PSF	Top Rent PSF	% of Top Rent	Date
CARDIFF Caerwys House Windsor Lane	39,184	201,430	5.14	6.75	76	1972
CROYDON Amy Johnson House Cherry Orchard Road	30,486	274,000	8.99	12.25	73	1980
EDINBURGH 7/8 Rothsay Terrace	13,362	60,000	4.49	9.00	50	25yrs
GLASGOW 225/255 Bath Street	89,093	605,000	6.79	8.50	80	1980
HATFIELD Oriel House 87 Great North Road	7,442	57,000	7.66	11.00	70	1973
LONDON W1 4 Stratford Place	11,229	165,000	14.69	25.00	59	1971
LONDON W1 19/19A Hanover Square	26,622	512,500	19.25	37.50	51	1973
LONDON W1 9/15 Sackville Street	26,173	650,000	24.83	37.50	66	1983
ORPINGTON Septre House Carlton Parade	10,442	69,000	6.61	9.00	73	1960
REDHILL Betchworth House Station Road	31,363	423,399	13.50	14.00	96	1984
STEVENAGE Six Hills House Six Hills Way	75,433	535,000	7.09	7.00	100	1982
SWINDON Guild House 39/54 Farnsby Street	51,178	396,500	7.75	8.50	91	1980
WALTON ON THAMES Nelson House Mayfield Road	19,955	225,000	11.27	13.00	87	1976

WATFORD Star House Clarendon Road	47,992	512,410	10.68	15.00	71	1970
WOKING Planet House Guildford Road	10,270	87,000	8.47	14.50	58	1966
HORSHAM Bridge House 68/70 East Street	6,250	54,500	8.72	10.00	87	1980
CAMBERLEY Charles Church House Knoll Road	21,775	238,000	10.92	13.00	84	1982
HORSHAM Enterprise House Worthing Road	26,221	230,000	8.77	10.00	88	1984
ST ALBANS Samule Ryder House Grosvenor Road	19,927	220,000	11.04	15.00	74	1984
MAIDENHEAD 14/18 Cookham Road	5,426	65,650	12.00	16.50	73	25yrs
LONDON W1 17 Stanhope Street	8,048	275,000	34.17	37.50	91	1973
LONDON W1 50 Brook Street	3,767	120,000	31.86	37.50	85	25yrs
WEST BROMWICH Lanchard House Victoria Road	27,384	74,350	2.71	3.50	77	1975
LONDON W1 43 Upper Grosvenor	7,921	178,000	22.47	37.50	60	25yrs
CAMBRIDGE Cintra House Hills Road	20,465	146,500	7.16	10.25	70	1978
WOKINGHAM ICL House 74/78 Peach Street	13,868	180,000	13.00	14.00	93	1975
LONDON EC1 Christopher Hatton House	12,452	143,000	11.48	35.000	33	1957
BRADFORD Euroway Trading Estate	18,018	61,000	3.38	7.00	48	1978

LEEDS Digital House Techno Centre Lister Hill Horsforth	14,492	66,000	4.55	7.00	65	1975
HUDDERSFIELD Kirklees House Market Street	29,655	85,500	2.88	7.00	41	1973
STAINES Ratcliffe House Leacroft	4,105	60,000	14.61	16.50	88	1983
CAMBRIDGE Kett House Hills Road/Station Road	32,634	240,000	7.35	10.25	72	1964
BATH 20 Manvers Street	41,650	190,000	4.56	6.50	70	1973
CHELTENHAM 53/57 Rodney Road	8,462	41,000	4.84	6.50	74	1975
OXFORD Block B Raylan House Cowley	11,690	91,550	7.83	9.25	85	1983
CHELTENHAM Burlington ouse Lypiah Road	11,334	60,000	5.29	6.50	81	1972
EDINBURGH 17 Rothsay Place	5,494	24,500	4.46	9.00	49	25yrs
SURREY Merevale House Parkshot Richmond	6,572	82,150	12.50	15.50	61	1972
WILMSLOW Brook House and Burton House Church Street	29,727	185,750	6.24	8.00	78	1975
YEOVIL 50/52 Middle Street	2,127	6,750	3.17	6.25	51	1974
BATH Lewis House 3-4 Manvers Street	19,744	94,000	4.76	6.50	73	1972
EPSOM 55 East Street	17,036	200,000	11.78	12.00	97	1984
SUNBURY ON THAMES Staines Road West	7,400	81,400	11.00	13.00	85	1970

GRAPH 9.7.1. Office Rent Analysis 1987



Chapter 10

DESIGN ASPECTS CRITICAL TO VALUE

Chapter 10

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10.0

Hypothesis IV suggests that there is a relationship between rental value, age and design but that certain aspects of design have more affect than others. The National Office Survey found a link between age and poor design. The analysis of rental data for Guildford and Great Britain generally found that there appeared to be a relationship (although statistically not a strong one) between building age and rental value.

Whilst this implies that poor design in older buildings may be one of the reasons why older buildings have a lower rental value, it does not prove the point. Indeed, it is a moot point as to whether sufficient data will ever exist to statistically prove this point, bearing in mind that some old buildings have a unique higher value than newer buildings and because the market value of buildings, as will be discussed, varies dramatically depending on different stages of the property market cycle.

10.1 Analysis of Buildings

As previously explained in The Methodology (Chapter 6) three office buildings were analysed to shed more light on the relationship between design and rental value. As the following pages indicate from these studies certain aspects of design have more influence than others on the value of the buildings.

10.2 Apex Tower/CI Tower (Formerly St George's Tower)

High Street
New Malden
Surrey

Brief Description

Apex Tower has some 93,000 sq ft of office accommodation plus car parking. CI Tower has 98,000 sq ft of accommodation which includes 86,220 net on basement, ground and 15 upper floors plus 7,960 sq ft of office space on the first floor above 6 retail units. Both buildings were built between 1965 and 1970. As the following will relate, CI Tower was refurbished in 1983.

10.3 Historical Background

In 1981 it was clear from records that Apex Properties plc owned these two buildings with the company receiving 57.5% of the rental income, the freehold being owned by the Church Commissioners for England.

From stockbrokers reports (Scrimgeour Kemp Key & Co), on 23rd August 1983 Apex Properties had embarked upon a major refurbishment of the CI Tower. The Apex Tower was let to the PSA but they had sub-let much of the space to Esso. Expenditure on the CI Tower, then known as St Georges Tower, was estimated to be some £3 million. Assuming that the building could be let at £10 per sq ft at a yield of 7%, the estimated capital value of the asset on completion of the work was around £14 million.

In April 1983 it had been predicted by stockbrokers that the letting of CI Tower (then still known as St George's Tower, New Malden) would signal a jump in asset value. By then some £4 million had been spent on the refurbishment works. By October 1983 £4.5 million had been spent on refurbishment and the work was largely complete.

No rental income had been received since September 1981 during the refurbishment period. The original asking rent had been £12 per sq ft but this now looked high and £10 per sq ft looked more realistic at that date. Although the estimated net book value was put at 160 pence per share, based on a director's portfolio valuation producing £19.9 million, the net asset value was calculated to be 111 pence per share.

In January 1984 brokers reported the refurbishment work now to be complete and to have been carried out to a high standard.

In February 1984 brokers were still saying that everything depended on the successful letting of the CI Tower in New Malden and pointed out that the rent being asked for the building was set at a "pioneering level" for the area. At that time rents were in the region of 9 per sq ft in New Malden although there was not a very active market. There were signs that the market was improving and it was anticipated a letting might take place at around £11.50.

In August 1984 it was realised that there was little to indicate that "an early letting" could be expected and it was then realised that £9 per sq ft would be the best that could be achieved in the area. The companies fortunes remained massively dependent on this one property.

In November 1984 it was again realised by brokers that £12.50 per sq ft looked high when compared to recent rents. A disappointing level of enquiries had been seen in recent months and it was realised that any letting would likely incorporate significant front end concessions such as fitting out costs and a rent free period.

In February 1985 there had still been no interest in the building from tenants.

In December 1985 another stockbroker (Quilter Goodison Co) said:-

> "Apex Properties are currently suffering the worst fate that any property development can face, namely having a major building representing half the portfolio by value sitting empty following a major refurbishment, with no tenants having been found over the last 2 years. For Apex Properties the problem is compounded for if no tenant is found shortly, in two years time another part of their portfolio in an adjacent building (Apex Tower) will be vacated and will be in need of refurbishment.
>
> The sorry state of affairs reflected in the latest external valuations of the Apex Property Portfolio where a sharp down-grading of value to below costs created an extraordinary debit in the profit and loss account, slashing the net asset per share from 115 pence per share to just 71 pence."

This change in value can be seen in Table 9.8.1.

In January 1987 it was noted that only 2 of the 14 floors of this 98,000sq ft building had been let 3 years after completion of refurbishment works and whilst an initial income of £100,000 from a part letting was due in that month, the revenue account for the full Apex Properties got worse due to the impact of interest paid relating to these refurbisment works.

In May 1987 it was reported that Randsworth Trust had completed the takeover of Apex Properties. Throughout the period 1981 to 1986, the share price of Apex Properties was largely dependent on the fortunes of the CI Tower and, to a lesser extent, Apex Tower. From 1985 the market sentiment moved against Apex Properties enabling Randsworth Trust to acquire the company.

In June 1987 the Estates Times reported that 16,850 sq ft had been let at £10.25 per sq ft and terms had been agreed on a further 27,000 sq ft. This left 34,000 sq ft still available at £12.50 per sq ft.

In June 1987 Healey & Baker valued the asset for mortgage debenture purposes at £10 million noting that the Annex office accommodation still remained unlet and that 3 of the 6 retail units were also not producing rental incomes.

In the Randsworth Company Report of June 1987 it was noted that the £10 million capital value represented an increase in value of £4.5 million since acquisition.

By December 1987 the whole building had been let with the last rent exceeding £13. Tenants in the building included Pepsi Cola Corporation, Stearns Catalytic International Ltd, 7-Up, Kaufman de Muth, FMC Corporation (UK) Ltd and Dalton's Weekly Magazine.

10.4 Building Inspection

10.4.1 Structure/Shape/Flexibility

An inspection of the building by the writer on 31st January 1988 revealed a number of points although, the tenants in detail were not asked what they thought about the building. The structural floor loading will only accept 80lbs per sq ft superimposed loading which is light by any modern standards. Many modern buildings are built to 120lbs per sq ft although CI Tower does allow for an additional 30lbs per sq ft for partitioning.

The actual shape of the floor with its central core does not allow for ideal flexibility. The main lettable area has to be used for communication corridors and the cross to net ratio (that is the relationship between the gross external size of the building and the net internal area) is extremely poor. Whilst the net internal area only represents some 70% of the gross external area, the net usable area is smaller still.

One of the findings of the National Office Survey was that the ideal wall to wall width for a rectangular building is some 45ft. A square building such as CI Tower cannot possibly achieve this due to its inherent shape. Therefore comparing CI Tower with the survey findings, it must be accepted that the overall shape of the floor is poor in relation to its flexibility as an office building.

10.4.2 Car Parking

One of the problems which the CI Tower did not exhibit was that of car parking. A considerable number of car spaces were allocated which more than met the requirements of tenants wishing to use the building. The building was also immediately adjacent to New Malden

Station and on several bus routes. Car parking was therefore not an issue which concerned either the managers or the staff occupying such a building.

10.4.3 External Appearance/Visual Image

Whilst it is clearly a subjective viewpoint, the building clearly has a 1960s external image. As the building has been let to a number of tenants, the fact that each tenant does not have his own individual identity clearly conflicts with the findings of the National Office Survey. The survey replies indicated that given a choice tenants would prefer to rent an office building with its own front door/external identity rather than occupy a multi-let building.

Despite cleaning up the outside of the building and building a new entrance hall, the entrance is still visually unexciting and does not attract interest to the building. Although the external landscaping has been improved it is poorly maintained. The external appearance/visual image of this building is clearly poor.

10.4.4 Internal Services/Amenities

From an inspection of the building, as the building had recently been refurbished to a reasonably high standard, there was nothing of particular note in the internal arrangement of the amenities which conflicted with the findings of the National Office Survey. The exception being that the air conditioning unit has been built on a 3 window module such that, if an occupier wished to partition the office space which conflicted with this three window module, there would be difficulties re-balancing the air-conditioning system.

Floor ducting was not ideal as there clearly is not a raised floor built into the building. However a grid of floor trunking does permit a variety of cable configurations to be laid into the floor.

As far as fire escape provisions are concerned, there is only one means of escape and it is doubtful whether this building would be permitted by today's building regulations. However, to meet the needs of the fire officer, it is clearly necessary to provide a high percentage of floor area for fire escape routes rather than occupy the space with desks. This clearly reduces the usable area of the building.

With reference to the internal services/amenities, clearly when comparing the results of the National Office Survey with this building, there are areas where design improvements could be made.

The fundamental problem with the building relates not so much to the internal amenities but to the basic flexibility of the building in terms of floorspace and the single central access core. A 45 ft wide rectangular module building would be more satisfactory but, for a multi-let building, a series of smaller buildings with their own identity would achieve even greater success in the letting market.

10.4.5 Conclusion

With the exception of car parking, CI Tower clearly had a poor design which was very similar to the areas of office design which the National Office Survey found to be least satisfactory. During the period from 1981 to 1986 the basic nature of its design meant that, despite being refurbished, it was far less likely to let in a "tenants market" when there was a surplus of buildings relative to the level of demand.

Table 10.8.1
Apex Properties : Net Asset Value and Share Price

Date	Net Asset Value	Share Price
March 1980	171	N/A
March 1981	173	107
May 1982	200E	107
21 August 1982	185E	112
31 August 1982	200E	110
23 November 1982	185E	100
4 February 1983	180E	96
6 April 1983	180E	102
24 October 1983	160E	100
16 January 1984	165E	108
27 February 1984	165E	108
22 August 1984	165E	123
16 August 1984	160E	115
26 February 1985	115	102
18 December 1985	71	75
27 January 1985	64	76

1986/7 Acquired by Randsworth Trust

10.5 Catherine House

The Crescent
Surbiton
Surrey

Brief Description

This is an office building containing around 34,500 sq ft just of Claremont Road. It is air conditioned and contains 60 car parking spaces and was completed in 1983. It is almost immediately opposite Surbiton main line railway station but only a few miles from Apex Tower, New Malden and less than one mile from Millenium House, referred to later.

10.6 History

The building was constructed by Carlos Estates Ltd a trading subsidiary of Haslemere Estates plc in partnership with a local developer, Kingston Estates Developers. The main contractor was Waites Construction Ltd.

When the building was put on the market in 1983 (when refurbishment work at Apex Tower, New Malden was being completed) it immediately let at a rent of in excess of £13 per sq ft to the Distillers Company plc. Shortly, after the completion of the letting, the developers decided to sell the investment. Although it was widely marketed to institutional investors, Distillers Company plc acquired the investment for their own investment portfolio. It is possible, although the exact facts are not known, that Distillers Company plc saw the opportunity of using the plant and machinery allowances in the building to their advantage.

In 1987, following the takeover of Distillers Company plc by Guinness, the building was put on the market by agents John D Wood seeking offers of about £7 million. The previous marketing agents had been Morgan Grenfell Laurie who were replaced by John D Wood following the governments investigation into the Guinness takeover.

At the time that the property was put on the market in May 1987, the occupiers decided to sub-let the whole building at a rent of £525,000 per annum which is equivalent to £15.50 per sq ft.

10.7 Building Description

When the building was originally let, Catherine House was described as being designed to provide flexible, quality offices with a most striking and attractive appearance. The specification was described as "of the very highest standard throughout" to comply with the most exacting energy conservation requirements. It was suggested that the building combined one of the most pleasant working environments with the advantages of good communications by rail, road and air.

Although next to Surbiton Station which gives good access to Central London, the road access was not dissimilar to that of Central Kingston. Access to air transport was also not dissimilar to Central Kingston.

The following appeared in the original letting brochure in 1983 under the title of Technical Data and Detailed Specification. It sets out clearly the high quality of the building on ground plus three upper floors.

10.8 Technical Data and Detailed Specification

10.8.1 EXTERIOR

High quality curtain walling and powder coated aluminium framing double glazed "Tilt and turn" opening lights. All external walls have an insulation value of 0.6 W/square metre or better.

Glass is Stopsol Thermoplus units in the viewing area. Units are sealed and double glazed with the inner glass face coated with gold and the cavity filled with inert gas to achieve a "U" value of 1.8.

The outer glass face is also coated to provide a Mirror finish.

Front entrance doors are of toughened glass, horizontal sliding self-closing doors to match glass walls, fitted with Modric handles and security locks.

A cleaning cradle is provided.

The car park with 60 spaces is Tarmacadam with pre-cast concrete kerbs and decorative paved areas. A 150 space public car park is immediately adjoining.

10.8.2 INTERIOR

Entrance/Reception areas:

Travertime marble floor and walls.

General Office areas:

The floors are finished in high quality Grade 4 carpet on 65mm screed.

The walls are plastered and emulsion painted - honeysuckle. There is a concealed grid suspended ceiling of Fissured Minatone planks, shadow gap edges, air slot diffusers and luminaries, all held flush upon structural sections with continuous treads to take partition heads.

The Washrooms:

The floors are of high quality ceramic tiles. There is full height glazed ceramic tiling on the walls with mirrors in the basin areas.

The Lifts:

There are two 12 person automatic Otis lifts serving all floors and finished to a high standard including carpeted floor with mirrors and carpet on the walls.

Load 900 kg. Speed 1 m/sec.

Fire Alarm:

The fire alarm system in each lobby is operated by batteries and activated by smoke detectors and alarm buttons and will operate audible alarm sounders, smoke dampers and smoke extraction fans.

Heating and Ventilation:

The heating and air conditioning system has been designed to allow complete flexibility of planning and to minimise running costs and maintenance costs.

1. Partitioning can be incorporated with freedom without unbalancing the air-conditioning and heating.

2. Individual control of the air conditioning and heating is possible within each partition module.

3. The fresh air option is always available as there is one opening window within each partition module.

This flexibility has been achieved by the following factors:-

a. The building is divided into 12 air-conditioning areas which are under autonomous control although operating from the centralised gas fired boilers.

b. Each of the areas is sub-divided into approximately 20 separately controlled zones.

c. Continuous slot diffusers despatch the conditioned air.

d. Air when recirculated is mixed with controlled proportion of fresh air.

e. During periods when heating is switched on full advantage is taken of heat recovery.

Module:

The building is designed with co-ordinated lighting and window modules. The module size is 1.3 metres.

Trunking:

Each wing of each floor has two cross-connected runs of floor trunking for small power sockets. GPO wiring and data processing wiring for VDUs. There are 80 telephone lines and 6 telex machines.

Lighting:

Office areas are lit by recessed fluorescent fittings with 83/84 'power saver' tubes and mirror diffusers. With automatic light reactor "switch off" system. Window mullions and lights allow maximum flexibility for partitioning.

Floor Loading:

100 lbs per sq ft.

Windows:

Designed for maximum energy conservation and minimum solar gain with double glazing, treated with gold and argon gas filled.

10.9 Comment

There is no doubt from the above exterior and interior specification that the building was designed and built to the most advanced specification at the time. The overall modular shape of the building was designed to provide the maximum of flexibility and reduce the non-usable area to an absolute minimum.

Perhaps the most important feature was the heating and ventilation system which was designed to be extremely flexible yet minimise running costs. Very few buildings at this time were built to such a high specification incorporating such ideas as 12 air-conditioned areas with autonomous control which could each be sub-divided into 20 separately controlled zones.

The building was let at one of the lowest points in terms of the cyclical United Kingdom office market in 1983. At that time there were a number of buildings un-let in the Kingston upon Thames area and few tenants seeking new office accommodation. Those tenants who were seeking office accommodation at that time had a choice and were clearly able to choose the better buildings. In the case of Catherine House, the tenants had a choice which included the Apex/CI Tower in New Malden and the Tolworth Tower in Tolworth, both buildings being not more than a mile or two from the building they eventually chose. Millenium House in Kingston was also available to let.

Although the asking rent for many office buildings in the Kingston area in 1983 was in the region of £10 per sq ft, the developers were able to achieve the rent considerably higher reflecting the high quality of design of this particular building.

10.10.0 Millenium House

Eden Walk
Kingston upon Thames
Surrey

Brief Description

Millenium House is an office development above an open shopping precinct in the centre of Kingston upon Thames. Due to the road layout of Eden Street and the requirements of the shopping malls, it is a curved building. The design also has had to accommodate the needs of a multi-storey car park which is accessed via a spiral ramp immediately behind the office building. The car park commences at 2nd floor level.

Millenium House, although it has a ground floor entrance on to Eden Walk, commences at the first floor and has two additional floors above. In total it contains a net lettable area of around 23,600 sq ft.

10.10.1 Historical Background

The total scheme, ground floor shops and office above (Millenium House) was developed in the mid 1970's. Records show (Focus Database) that by 1976 the development was completed. It was developed jointly by English Property Corporation plc and CIN (Coal Industry Nominees), the Pension Fund of the Coal Board. The Royal Borough of Kingston upon Thames owned the freehold and it is believed that they granted a long leasehold interest and then took a lease back from the completed development, thereby guaranteeing the rental income of the development to the investor.

At some point between 1978 and 1982, the top floor, some 7,600 sq ft was let to the Combined Insurance Company of America. This company already had office accommodation in Kingston and it is understood that they took the additional floor of Millenium House to meet their expansion needs.

The remaining two floors remained unlet until 1984. On 29th October 1985 the writer visited the building in connection with the National Office Survey and interviewed the Branch Manager of the Norwich Union who had recently taken up occupation of the middle floor. The first floor remained unlet until 1988.

The Kingston branch of Norwich Union were previously located in 76 Eden Street, less than 100 yards from Millenium House. In 1983 it became apparent that, due to the expansion of their business and staff numbers, they would have to seek new accommodation.

The interview revealed that expansion, changing office technology, staff requirements, image of organisation and working environment were the main reasons for leaving the existing premises.

The reason for choosing Millenium House, apart from being as close as possible to the old premises were given as: proximity to the market of customers, leisure/recreation/environment facilities nearby, a good housing stock, availability of required staff locally and good road/rail/air communications.

The idea to move was initiated by the Regional Manager (the interviewee) who invited the Chairman of Norwich Union to visit Kingston Branch in November 1983.

Lease Terms

Negotiations then took place resulting in a proposal to rent the 2nd floor being then sent to the surveyors (letting agents) acting for the owners on 19th July 1984 as follows:-

10.10.2 2nd Floor Millenium House, Kingston-upon-Thames

Further to your letter of the 17th July and our subsequent telephone conversation, I am writing as arranged to set out the terms which we are prepared to recommend to our Branch Organisation in respect of the above.

Tenant	Norwich Union Life Insurance Society
Premises	The demise to comprise the whole of the office accommodation on the 2nd floor of the building known as Millenium House, Eden Street, Kingston together with 10 car parking spaces at first floor level in the adjacent multi-storey car park to be reserved for the exclusive use of the tenants at all times.

Term	10 years to commence September quarter day 1984.
Rent	The initial rent to be £51,000 per annum representing approximately £7 per sq ft on the net internal area of the demise agreed at 7325 sq ft.
General and Water Rates	The Society will be responsible for payment of general rates direct and will contribute an appropriate proportion to the water rates through the service charge to be levied.
Repairs and Decorations	The Society will covenant to repair the interior of the demise only and decorate the interior in the 5th and last years of the term.
	We have brought to your client's attention a number of existing items of disrepair which we feel should receive immediate attention. An assurance will be required from your clients that these matters will be attended to promptly at their expense - the cost of necessary works will not be passed through the service charge to be payable in respect of the demise.
User	Offices
Assignment and Subletting	The Society to be permitted to assign or sublet the whole and sublet parts of the demise. Initially a subletting of the rectangular area adjacent to the toilets and lift lobby is anticipated.

Service Charge There are a number of detailed points on this subject which will need to be dealt with at draft lease stage. However, broadly speaking, we are prepared to recommend that service charge provisions of the type included in the third floor lease be accepted subject to the matters mentioned above.

Rent Free Period A rent free period in respect of the whole accommodation of one year will be required to cover the period of the fitting out contract, the cost of installation of lighting and bringing various of the internal finishes up to an acceptable standard.

We would not expect to instruct joint agents in respect of the area to be sublet. We are, however, prepared to recommend that your firm be appointed to let the surplus accommodation on the usual fee basis of 10% of one year's rent. Provided the Society's fee commitment is limited to that level we would see no objection to your involving a local agent jointly. Should the area for subletting not be rent producing at the end of the one year rent free period we would require a proportional abatement of rent until this occurs, the appropriate reduction amount to £7,070 per annum.

Signs/ Publicity We will let you have our Branch sides proposals in this respect as soon as possible. However we will certainly wish to see the Society's name and logo displayed in the tenant's board in the ground floor entrance hall and I am enclosing some photographs of the sort of thing we would have in mind for the second floor landing.

Costs Each party to bear their own costs.

The above is largely a summary of what we have established in previous discussions/correspondence to be agreeable to both sides so I would hope that you will be able to confirm that the package would be acceptable to your clients so that we can move on to instructing respective Solicitors.

You will of course recall that there are various other matters which we have discussed such as the availability of water/drainage supplies at the east end of the suite, access to the building and car park outside normal working hours etc. but I do not think there is anything outstanding at this stage to prevent us going to draft documentation pretty well immediately.

10.10.3 Comment

Several points emerge from this terms letter which are significant from the point of view of the design of the building.

The arrangement for 10 car spaces in the adjoining multi-storey car park was far from ideal but necessary due to the location of the building. This implies one car space for every 5 or 6 employees, far from ideal.

Whilst the term of 10 years was not unusual, as investors at that time preferred to let on a 25 year basis, this indicates the tenant was in a strong position to negotiate preferential terms.

The rent of £7 per sq ft was extremely low compared with £10 per sq ft which had been agreed on other lettings in Kingston at that time.

Catherine House, in Surbiton, only 0.5 mile to the south let at that time at a rent in excess of £13 per sq ft.

The tenant taking on the terms of the headlease review pattern and being responsible for all repairs was much in line with current property market practice in the UK as was the agreement to accept the service charge arrangement.

The rent free period is illuminating. It reveals that the in-going tenant anticipated spending 12 months to bring the building up to a design standard suitable for its occupation. In fact it took even longer than 12 months to fit out the building ready for occupation.

Clearly the tenant was anticipating difficulty subletting part of the building not required and was able to negotiate a reduction in rent if the subletting was not achieved in the 12 month period. This subletting had still not been achieved several years after the original lease was granted.

At the end of the letter the tenant is anticipating the problem which later arose regarding "water/drainage supplies at the east end of the suite".

The following point arose from the interview undertaken by the writer of the tenant on 29th October 1985.

10.10.4 Building Design

When asked to rank in order of importance, the design considerations, the following resulted:-

1st	Internal Services/Amenities
2nd	Car Parking
3rd	External Appearance/Visual Image
4th	Structure/Shape/Flexibility

10.10.5 Structure/Shape/Flexibility

The tenant claimed the floor loading capacity was adequate but the support columns were not located to enable the building to be used in an ideally flexible way. The floor layout and the position of the columns indicates the problems these caused to the tenant when the fitting out was being designed.

From the interview, whilst the tenant claimed the curved shape of the building did not detract from the building, the problems of creating usable office space of a rectangular nature were clearly very real. The tenant estimated 90% of the lettable area was lettable although he had not measured it. He also felt the 40 ft width of the building, with windows on both sides of the building was ideal for his use.

As the building was not intensively occupied (which at such a low rent was not important!) it was not surprising the tenant claimed that there was room for expansion. Although the building had potential capacity, if ideally designed, for over 50 staff, only 30 were projected to use the space.

When asked about the shape and how it could be improved, he stated a rectangle with a central corridor would have been preferable which also included a conference room and more toilets.

It was at this point in the interview the tenant first started to explain problems of creating a conference room, catering/kitchen facilities and toilet accommodation. An easement had to be negotiated with the landowner (the Royal Borough of Kingston upon Thames) for drainage to be connected to the public sewerage system many yards from the building. The time for the legal bureaucracy to produce this easement as well as the physical construction works necessary to connect the 2nd floor office (in reality a 3rd/4th floor due to the ground floor retail use) to the new sewerage system was considerable.

Due to the design of the original building, inadequate toilet accommodation was provided at the west end of the building by the stairway. New toilets were therefore constructed at the eastern end. But there were also no provisions for the installation of kitchen/catering facilities. The rent reflected the necessity to undertake substantial works to fit out the premises.

It is clear from the interview that both the low rent and the fact that the building was unlet for eight years was partly due to the poor design, both the shape and the lack of toilet and kitchen facilities.

10.10.5 Car Parking

The tenant claimed that, although he had the use of 10 car spaces, he also rented one extra space. Although the building had the capacity for up to 50 persons, only about 30 were using the premises implying a car space employee ratio of 1:3.

The tenant admitted that the car parking for management was satisfactory but for the staff it was poor. He claimed he would like to see more car space as part of the rental payment and would be reluctant to pay more rent for additional spaces.

10.10.6 External Appearance/Visual Image

The identity of the building was not considered to be important and there was no preference for a single tenanted building. However the external appearance of the building and the office entrance was important but landscaping less relevant. In this case the tenant thought the external appearance was probably good.

10.10.7 Internal Services/Amenities

The building was provided with two 8 person passenger lifts, gas fired central heating with an air change system, was carpeted throughout and had a suspended acoustic tiled ceiling.

The internal services listed in section 3.5 of the questionnaire were all considered to be good with the exception of the heating system, the internal environmental control and the toilets. The kitchen/catering facilities were poor (as they were not provided).

These results fall much in line with the results for the National Office Survey.

The building did not have air conditioning and this was not considered important.

The premises did not have raised floors and it was felt that the ducting in the concrete floor which was provided was adequate.

Overall the internal services were considered to be good.

The tenant claimed the fire escapes did not conflict with his use and that the security aspects were adequate.

10.10.7 Rental Payment/Lease Terms

The rental terms were known and given by the tenant as £51,275 per annum for 7,325 sq ft ie. £7 per sq ft based on a lease starting in September 1984 for 10 years with a 5 year rent review. There was no "break clause" permitting the lease to be terminated by the tenant or the landlord but there was a service charge enabling the landlord to reclaim from the tenant for the costs of maintaining the common areas.

However the exact figures relating to such items as repairs, maintenance, insurance and rates were unknown. This accords with the national findings; very few tenants seem to know how much it costs to occupy office premises and almost none knew how much of a companies turnover is spent on property.

The most important influence on the tenant was the open nature of the building enabling alterations to be undertaken, but at a cost in terms of funds and time. Although the curved nature of the building made dividing the building difficult, it was not impossible. The tenant however would have paid more rent for a better designed building such as a rectangular structure. The rates had not discouraged the tenant and the cost of maintaining the structure were not higher than had been anticipated.

Overall the important consideration was the location. The following 4 points were ranked as follows:-

1st Location

2nd Cost of rent/maintenance/rates

3rd Lease term

4th Design of the building

Although the design was considered least important, from the nature of the design it is clear that it had an influence on the timing of the building remaining empty and the rental value paid.

Although the tenant used consultants to design the internal layout, they claimed it would have been better to have built their own premises. Following the Chairman's visit in November 1983, they had hoped to move in May 1984. Eventually they moved at the end of October 1985 due to the difficulties of adapting the building to their needs - almost two years after the initial decision was taken to seek new accommodation.

10.11 Analysis of Buildings, and Rental Value in Relation to Certain Aspects of Design

From an analysis of three buildings (Apex Tower, Catherine House and Millenium House) some clear points emerge. All three were available to let in 1983, one of the lowest points in the cycle of the office property market when rental growth, due to a lack of demand, even for well designed buildings had come to a halt. However, Catherine

House did let immediately. From the evidence discussed it appears that the design of the building influenced that event whilst the poor design inhibited the letting of Apex Tower and Millenium House, despite the fact that the asking rent was significantly lower than for Catherine House.

Hypothesis IV suggests that there is a relationship between design and rental value which explains why older buildings have a lower rental value than newer buildings but that certain aspects of design have a more important influence than others.

The results of analysing these three buildings is in fact not straightforward, especially when one tries to consider investment performance. It is clear that design and the various stages in the property market cycle need to be examined together. At a low point in the market a well designed building like Catherine House let immediately yet Apex House and Millenium House remained unlet. When the market picked up Apex House let due to the shortage of office buildings not because it was well designed. The remaining floor of Millenium House also let in 1987 having been empty for 8 years.

It is clear that the shape of the floor in Millenium House (curved) and the very poor entrance were a major deterrent to the building being let. The National Office Survey clearly identified these features as being important to office tenants. The car parking, whilst being provided was also not particularly good both in terms of the number of spaces and the fact that they were part of a larger multi-storey car park used by the shopping public.

Apex Tower had similar problems, except that the car park was more than adequate. The external image of the building was not particularly attractive, despite attempts to modernise the entrance hall. The major design feature to early letting of this building was once again the overall shape of each floor. The square arrangement with a central core meant that the space was difficult to divide into lettable/usable units and the requirements of the fire regulations created a very poor usable to net lettable ratio.

The shape of each floor in Catherine House together with other amenities such as good car parking and an efficient heating system enabled this building to let quickly.

These findings confirm the findings from Question 3.1 of the National Office Questionnaire which found that the shape of the floor was far more important than either the internal amenities, external appearance or car parking. In other words if the floor shape is not acceptable to tenants, unless there is an extreme shortage of buildings in which case tenants will occupy any building, tenants are more likely to occupy buildings like Catherine House in preference to either Millenium House or Apex Tower.

Table 10.12
Summary of Analysis

(based on an assessment of marks out of 10 for each area of design)

	CI Tower	Catherine House	Millenium House
Structure/Shape/ Flexibility	3	9	5
Car Parking	8	8	3
External Appearance	5	8	4
Internal Services	5	7	4
Total out of 40 max.	21	32	16
Internal Services:			
Internal Environmental Control & Heating	5	9	5
Quality of Internal Finishes	6	8	6
Security	6	7	5
Cable Trunking Facilities	6	7	6
Toilet Facilities	6	6	6
Entrance Hall	4	8	3
Lift Performance/Reliability	6	7	4
Kitchen/Catering Arrangements	4	5	2
External Appearance	5	7	3
Total	48	64	40
Grand Total	69	96	56

10.12 Summary Analysis

There is no perfect or ideal way to summarise the design aspects of any building; all will depend upon the market to which the building is most likely to appeal. Table 10.12 however does provide a simple way in which an investor could assess the relative merits of the four principle design categories used in the National Office Survey.

One point which clearly emerges from this simple analysis is that, due to the inherent design problems relating to the CI Tower and Millenium House, there is a limit to how much improvement to the overall value is possible by refurbishment. Total rebuilding would seem a more appropriate remedy. This will be discussed in relation to the Property Investment Design Appraisal Model put forward in Chapter 12.

Chapter 11

DISCUSSION OF THE RESULTS

Chapter 11

DISCUSSION OF THE RESULTS

11.0

The purpose of this chapter is to pull together a number of ideas put forward in the early part of this thesis and relate it to the results generated from the research before examining how investment appraisal could be refined using the Property Investment Design Appraisal Model proposed in Chapter 12.

The structure of this chapter is to look at Property and the Economy, the Rationale for Property Investment and the Literature Review and relate each of these three chapters to the results generated by the research and the hypothesis put forward in this thesis. Each Hypothesis is then examined in the light of the results generated by the results of both the National Office and National Office Design Surveys.

11.1 Property and the Economy

An examination of property and the economy, both national and international, identified certain events which have influenced office market values. The 1970s and early 1980s were dominated by the influence of the oil market on world economic events. These events created a cyclical pattern of behaviour in the economy which in turn created a cyclical pattern in the office market.

It was the downturn in demand and investment performance of the office market which initially stimulated the hypotheses of this thesis that there was a greater need to understand the relationship between different types of office buildings and their financial implications in terms of value. At the time of the recession in 1982 many apparently older and badly designed buildings remained empty. Superimposed on the results generated by this thesis is the concept of a cyclical market. The National Office Survey undertaken in 1985 and the National Office Design Survey undertaken in 1986, identified areas of building design which create the most dissatisfaction. In other words, Hypothesis I, II, III and IV were found to be correct at that time; tenants were dissatisfied with the design of office buildings.

The limitations of this thesis, in terms of time and resources, is that this hypothesis may not hold good at different stages of the market cycle; there may be less dissatisfaction in a buoyant market compared with a depressed market or even if there is dissatisfaction, buildings with a poor design may let.

An examination of trends in the market did discover that, in the long term despite the cyclical behaviour of the market, certain sectors of the employment market are expanding and that these sectors are likely to need more office space. The results of this thesis imply that this expanding sector of the working population is not receiving an appropriately designed office building from those who produce such buildings. More than 60% of office tenants in multi-let buildings for instance claimed that they would prefer their own front door.

Hypothesis II, and the results relating to the level of dissatisfaction amongst different sub-sectors of the office market, illustrates the mismatch between the level of design of office buildings and different sectors; there is not a homogenous market.

One clear example is the growth of the self-employed sector and small companies generally. The survey results discovered that the entrance hall was especially poorly designed for smaller occupiers but the survey also discovered that not only would 61% of tenants in multi-tenanted buildings would prefer a single tenanted building with its own identity, 80% of all tenants wanted their own front door and individual identity.

Relating the cyclical economy to Hypothesis III also requires further research. The results showed that there was a relationship between rented value and the age of the building and that this could be partly attributed to the survey results which showed older buildings had a far less satisfactory design than new buildings.

However this analysis carried out in the period 1985-1986 would possibly be very different if undertaken in 1988. At this time even poorly designed buildings (such as Apex Tower and Millenium House used in this thesis) were fully let and it is possible that the slope of the line (see graphs 9.6.1 and 9.7.1) would have been reduced; in other words the rental value of older and poorly designed buildings would have been similar to the rental value of prime buildings.

Table 2.8.1 entitled Property Value Trends illustrates the changes in rental growth, year by year and the resulting office investment performance year by year from 1981. Future research should aim to improve the markets ability to forecast these cyclical movements and relate the influence of design on values at different stages of the market so that the cyclical movements of the market as well as the design aspects of office investment are more fully understood.

11.2 The Rationale for Property Investment

The rationale behind property investment is that by identifying investments which are well located and designed, the price is adjusted according to tenure, lessee and lease structure, the investor will enjoy rental income and capital appreciation.

The traditionally accepted valuation model was illustrated in Chapter 4, section 4.0. Whilst the property investor is also able to identify the characteristics of property investment which may compliment other investments in non-property investment sectors, he needs to be aware of the potential disadvantages of property investment.

In the same way that many investors have a very crude understanding of the cyclical behaviour of the office property investment market, most investors have no clear ideas how building design influences investment performance. Whilst annual investment portfolio analysis is gaining ground with many investors, the influence of design is rarely considered or appreciated.

The results of this thesis set out in Chapter 7, 8 and 9 clearly illustrate that many tenants are dissatisfied with the design of their building and that, especially when the market is in recession as in 1985-86, there is a relationship between the rental value achieved (if achieved) and older, poorly designed buildings.

The rental value growth illustrated in Table 2.8.1 related to new prime buildings. From the results of this thesis, including the analysis of such buildings as Apex Tower and Millenium House, it is likely that poorly designed buildings will at times show no rental growth and actually show a negative investment performance as was demonstrated by the way Randsworth plc were able to acquire Apex Properties plc in 1986 due to the adverse performance of Apex Tower.

Many investors do not entertain the concept of a "negative" investment performance when acquiring a new investment but simply intuitively refer to the "growth prospects". One of the concepts behind the rationale for property investment is that the process of valuation, and the timelag between economic events and changes in property investment performance, is one of the advantages of property investment over the more volatile stock market type of investments. In other words the valuation of property changes at a far slower rate than the minute by minute changes which can take place with equities. The results of this thesis suggest that one concept property investors should build into their rationale is that, at times of recession good design is more important than when the property market is buoyant with demand. To do this investors need a better understanding of design as illustrated by the results of this thesis. It is this factor which leads into the concepts behind the Property Investment Design Appraisal Model which appears in Chapter 12.

11.3 Current Literature

Over recent years the amount of published literature on the property market has increased and some of it has contributed towards a better understanding of the forces which influence the market.

With reference to valuation and design, although traditional valuation text books, as well as valuations in practise, have not generally considered the influence of design, there have been references, such as Baum (1981), to a cashflow approach to valuation methods. This implies that the design of buildings may play a part in such analysis although little is written about it and no methodology has been put forward to accommodate the design factor.

Bowie (1982) was the first writer as mentioned in Chapter 4 to raise the issue of depreciation and the office market, but no attempt was made by Bowie to clarify which areas of building design were most important in terms of obsolescence and depreciation. The results relating to Hypothesis I of this thesis, and especially the results relating to Hypothesis III concerning the lower level of satisfactory design with older buildings, has addressed this issue. The results of the thesis do identify those areas of design which are mostly likely to cause obsolescence and depreciation, and are most likely to influence value.

The financing of depreciation has been referred to in literature (McIntosh 1983), but so far this is an area upon which very few ideas have been progressed. North (1984) did examine the subject in his "propitious application of cost approach" but it was Salway (1986) who produced the first serious approach to the subject.

The main limitation of Salway's work (1986) was that it produced "estimates" of values from valuers rather than actual market evidence but he did not clarify which areas of building design might contribute to the depreciation of the values he collected. For instance, was it the structure/shape which had become obsolete or the internal amenities which had depreciated?

The results generated to test Hypotheses I and II have clarified those areas which are most likely to contribute to both obsolescence and depreciation but the results relating to Hypotheses III and IV (relating to actual buildings) takes the analysis a stage further. From market analysis the thesis identifies areas of design which are less satisfactory in older buildings and uses market values (not estimates) to measure the relationship between value and age.

It was Sykes (1984) who first attempted to suggest how the renewal of areas of poor design might be taken into account in investment appraisal. This work complemented the paper by McIntosh (1983).

The limitation of the work by Sykes is as explained in Chapter 4 that he did not attempt to identify, from market research, which areas of design would need refurbishment expenditure. Combining the work by Sykes (1984) with the results of this thesis does provide a framework for future analysis. A far more useful valuation appraisal model is needed - something which is put forward in Chapter 12 as the Property Investment Design Appraisal Model.

Work by Henderson (1981) and later in (1988) examined the elements of building design but, as with the work of Salata (1982) but there was no attempt to identify the different sub-sectors of the office market. The results generated by this thesis relating to Hypothesis II clearly demonstrate that there is not one homogenous "office market" but there are a number of submarkets which each need different design solutions.

The work by Duffy (1986) and the ORBIT projects summarised by Becker (1988) have attempted to look at the changing nature of the office workforce. Duffy (1986) demonstrated his theoretical concepts with the aid of a two dimensional matrix to illustrate the point but at no point did he undertake a survey of the office market of Great Britain. This analysis of "eleven contemporary office buildings" in the City of London was illuminating but the result of this thesis, particularly relating to Hypothesis II, takes such analysis a significant step further and identifies the different design needs of a variety of different office users.

The study by Loe (1987) put forward suggested life cycles of various design components. The major limitation of this work was that it was largely based upon the life cycle of materials (such as the building services/internal amenities) rather than a thorough understanding of consumer needs. The results of this thesis imply that Loe's work could now be expanded upon so that the concept of an "intelligent" building using a building management system could be tailored to the different subsectors of the office market. However there is a significant difference between the cost life cycle of design components and understanding how to apply them to investment appraisal.

Simultaneously with the National Office Survey reported upon in this thesis, various studies have looked at consumer needs. To some extent the published material compliments and confirms the findings of this thesis. Reports by Richard Ellis (1985 and 1988) and Debenham, Tewson and Chinnocks (1988) fall into this category but none examine the market in the national detail of the research undertaken in connection with this thesis, especially those results relating to Hypothesis II.

Reports produced by Jones Lang Wootton (1988) and Richard Ellis (1988) consider the relationship between age and a fall in rental value. These results confirm the results produced by this thesis in relation to Hypothesis III.

What none of these reports and the literature published so far appears to have done is to identify the different levels of dissatisfaction according to building age, which analysis of the results produced for this thesis has been able to identify.

Results from the National Office Survey clearly identified that tenants of older buildings are less satisfied with aspects of design relating to the internal amenities when compared with Great Britain generally. The financial implication from the results which confirmed Hypothesis III and IV is that different appraisals are needed, as will be discussed in Chapter 12, in different situations.

It is also worth noting that none of the published literature has discussed the subject of building design, depreciation and obsolescence in relation to the cycles of property market activity.

All of them were based on research undertaken before the revival of rental values in 1987 and 1988 and none state whether their holdings would apply in a very buoyant letting market or alternatively a very depressed letting market.

The Richard Ellis report (1988) states "Buying in at year 5 and selling out at year 10 on average has been particularly rewarding" but there is no discussion as to whether this statement would hold good at every stage of the investment cycle.

The fact that the report says "on average" implies that different submarkets may also behave differently. One of the limitations of the Richard Ellis report is that it only refers to "a sample of City of London offices". The results generated by the National Office Survey provide a framework for examining different submarkets but each market must, if the future research is to be meaningful, look at the cyclical trends referred to in Chapter 2 of this thesis.

To undertake such future research, some of the analytical concepts used in other markets may be helpful in understanding the investment behavioural characteristics of office property. The essential message which comes out from these results is that valuation techniques need to take into account design if they are going to be relied upon in the future. This subject is covered in Chapter 12.

11.4 The Results and Hypothesis I

This hypothesis suggested that tenants of office buildings were dissatisfied with the design of their buildings.The results of the surveys generally do not confirm this.

One of the major findings is that it is not normally because of design that tenants move building. Table 7.2.1. clearly shows that tenants mainly move to new buildings because of expansion. Building obsolescence is far less important.

However when tenants choose a new building analysis in section 7.4 shows that the structure/shape/flexibility are more important than the carparking, external or internal appearance. It is clear from the results that, despite this hierachy of preferences the location of the building is even more important, as illustrated by Table 7.4.1. The survey revealed that this finding generally holds good across the whole country.

An examination of the main design features revealed that the level of satisfaction with the external appearance is far higher than the level of satisfaction with the general floor layout and the internal amenities and especially the carparking are regarded as even less satisfactory. The conclusion to be reached is that insufficient time, money and effort has been spent on these two aspects of design.

It is the internal aspects of design which was the focus of attention in the survey. This revealed that it was the internal environmental control, heating and provision for cable trunking which were generally satisfactory or worse but not good.

The separate design survey to some extent confirmed this picture although cable trunking came after the quality of internal finishes and security as well as environmental control, heating and car parking in terms of importance.

The lack of understanding of tenants needs by designers of office buildings was confirmed by the survey of final year architectural students at Cardiff who revealed a different set of expenditure priorities. This was further confirmed by the survey which found that tenants felt too much expenditure was put into the external appearance and the entrance hall and not enough was spent on the internal facilities.

11.5 The Results and Hypothesis II

This hypothesis stated that the level of dis-satisfaction varied according to different types of office tenant.

The survey confirmed this; for instance it found that the level of satisfaction fell the higher the rental level of the building and that financial tenants were less satisfied than, for instance computer/electronic companies. Looking at the results overall revealed that, with the exception of the external appearance, tenants in office buildings in non traditonal central locations were more satisfied with the design of their buildings.

An explanation for this result is that, in recent years, much of the innovative building design has been undertaken in 'green field' sites and other locations not normally associated with office uses. Developers have been less constrained by existing building which have in some cases been adapted and in other cases new development has had to blend into Victorian street scapes.

The whole approach to low rise out of town office design is reflected in the results for the internal amenities which show an apparent dissatisfaction with the provision of lifts yet many earlier buildings deliberately did not include lifts. More recent buildings, even of only 2 or 3 floors, have tended to include at least one lift for both people and equipment.

To some extent the same applies to smaller buildings. The results found that the lift capacity and performance was less satisfactory in smaller buildings, some of which do not have lifts. Unfortunately the software which analysed the results was not sophisticated enough to distinguish between buildings with or without lifts and so there may be an element of distortion in these results. The same comment is applicable to buildings which, at the time of the survey, had a rental value below £10 per sq. ft..

With the more expensive buildings there appears to be more satisfaction with the heating system but still the over all level of satisfaction with the internal environmental control does not improve.

With industrial sectors it is the new innovative electronic sector which is most critical of building design. With the exception of internal environmental control, the financial sector seemed to most closely reflect the national results average. A similar result emerges from the professional sector with the exception of their poor appreciation of their lifts, which could also be put down to the fact that many of these tenants occupy buildings with no lift, a problem which was previously discussed.

One would expect that Administration buildings should be so out of line with the national results; many are chosen with cost cutting in mind rather than their design features. Ironically the results indicate a higher level of satisfaction which can be put down to the fact the location is less critical and therefore more effort can be put into finding a better building.

It is clear from the two surveys that there are different levels of satisfaction with office building design in different sectors of the market; there is not simply one homogeneous 'office market'.

11.6 The Results and Hypothesis III

The results showed in several ways the there is a relationship between age and building design. This is not to suggest that age causes bad design but that older buildings are not as well designed. The survey results showed that older buildings, especially thoses built before 1970 had a lower level of tenant satisfaction than for newer buildings.

The results from examining data from Guildford and, separately, the national market, show that there is a relationship between age and rental levels. Although the results did not show a strong statistical correlation it was strong enough to suggest that the lower level of rent could be attributed not simply to the building being old, but that poor design in older buildings contributed the the decline in rental value.

It should not be forgotten that the reverse could happen with 'historic' or buildings of 'architectural' merit where the value of the structure is not necessarily based on the value in use of the premises.

The survey also identified those areas of design where tenants thought design influenced value, such as the poor level of environmental control, poor carparking and quality of the external finishes. Despite rating the external appearance as least important, as mentioned in Chapter 9 they thought that it did influence value. It should be remembered that many were however satisfied with the external appearance of their buildings.

11.7 The Results and Hypothesis IV

From the knowledge obtained from the field surveys it is clear when examining certain buildings how aspects of deign influence value.

Despite the vast sums of money spent on Apex Tower later called CI Tower, due to the inherent poor shape of the structure cosmetic improvements could not encourage tenants to take up occupation. This resulted in Apex Properties getting into financial difficulties and being acquired by Randsworth Trust.

Catherine House enjoyed the opposite fate; good design led to it being let immediately on completion at a rent over the average for that period of time.

A survey interview of Millenium House revealed why this building also remained unlet for many years; the banana shape of each floor and lack of plumbing facilities resulted in costly and time consuming improvements before occupation.

There can never be an ideal way to analyse these result but Table 10.12 (which is discussed in greater detail in Chapter 12) does provide a frame work for understanding different aspects of design. From this analysis the level of knowledge is improved and better decisions can be made in the light of the analysis.

11.8 The Results and the Financial Implications

It was clear how the poor design of Apex Tower/CI Tower caused major financial problems for the building owner and how the reverse occurred at Catherine House. These design financial implications can be related to the results of the surveys but what is clearly needed is a formal framework for taking these factors into account. This is the objective of the Property Investment Design Appraisal Model which is explained in Chapter 12 which follows.

Chapter 12

THE FINANCIAL IMPLICATIONS

Chapter 12

THE FINANCIAL IMPLICATIONS

12.0 The Background

The results have demonstrated that the Hypotheses I, II, III and IV are valid and that tenants of office buildings in Great Britain are dissatisfied with the design. The results show there is a lower level of satisfaction with older buildings due to the poor level of design. This level of dissatisfaction is indicated by the fact that rental levels fall with older buildings.

Table 10.12 demonstrated a simple way of tabulating the results of design analysis to give the investor a clearer picture of the nature of an investment asset. Applying this table to financial appraisal will be discussed later.

Examining these results for their financial implications cannot be undertaken in isolation from the market and its pattern of cyclical behaviour. Chapter 2 explained how the cyclical behaviour of the property market reflected the cyclical behaviour of the national and international economy as a whole.

A prerequisite of examining the financial implications of building design and methods of financial appraisal, is to have an analytical knowledge of the rationale for property investment (see Chapter 3) and an appreciation of current valuation models. The trends in the cyclical nature of the office property market are also important but such a detailed study is outside the scope of this thesis. The analysis which follows necessarily assumes the investor has some, albeit unsophisticated, understanding of these cycles. The following is a review of current valuation models which have been mentioned previously.

VALUATION MODEL	REFERENCE	ADVANTAGES	DISADVANTAGES
Conventional Valuations	Section 4.0	Widely used in market	Does not explicitly state rental growth
		Based on intuitive knowledge of market depreciation	Not explicit
Equity/Debt Model	Section 12.1	Splits value into land and building	Not widely used in market
		Can allow for amortisation	Requires land building value growth rate
			Requires building value
			Does not take cyclical trends into account
Rational Model	Section 4.5	Rational discounted cash flow approach	Not widely accepted
			Assumes constant growth
		Based on market rental	
		Rack Rented yield rate	Requires a discount rate
		Relatively easy to apply target	Assumes constant relationship between rental growth and investment yield.

12.1 The Objective

The purpose of this chapter is to examine methods of analysis to identify the financial implications of building design. It will put forward the theoretical outline of the Property Investment Design Appraisal Model (PIDAM) as a new approach to appraising office property investments.

The first part of the chapter is based upon a paper on the subject of land values (Hutchings and McIntosh 1989). Land value and building value make up the total asset value. Not only do we not have a good understanding of the changing nature of land value, the market does not have a method to quantify how design influences building value. Understanding the relationship between Land Value and Building Value and the rate of growth of land values is essential to the Property Investment Design Appraisal Model which is explained later.

The second part of the chapter examines in greater detail the concept of the equity/debt relationship assuming different building design scenarios which is part of the basis behind the model being proposed.

The third part of the chapter re-examines the "Refurbishment-Rental Growth Model" (Sykes 1984) to see how applicable it is to different standards of design and re-examines the Depreciation and Appraisal Models (Baum 1988).

The fourth and final part of the chapter re-examines the Rational Valuation Model (McIntosh and Sykes 1983) to explain how it can be adapted to produce the Property Investment Design Appraisal Model which explicitly takes into account the influence of building design.

This is then followed by a section which explains the Property Investment Design Appraisal Model.

12.1.0 Land Values and Property Investment

There is a well established record of rental values and capital values nowadays relating to the commercial and industrial property market stretching back over more than a decade (Healey & Baker PRIME Survey, various dates). Similar data does not exist relating to land values. The aim is to analyse office land values over a time period to develop a theoretical approach to land value analysis as an aid to understand investment performance.

The Equity/Debt Model provides the background to such analysis. The dynamic nature of land values using quantitative technique to generate an index then charts the growth in land values; a pre-requisite to understand and apply the Property Investment Design Appraisal Model.

12.1.1 The Equity/Debt Model Reviewed

McIntosh (1985) presented a paper which aimed to understand the relationship between property investment and high tech development. One of the principle concepts put forward in that paper was the idea of an equity linked mortgage with the equity element being represented by the land and the building (which has a finite life) being funded on a mortgage basis. McIntosh (1985) stressed the advantages of this route due to the existence of generous tax allowances at that time. Whilst the tax allowances (except in Enterprise Zones) are less generous today, the concept is still applicable.

The Property Equity/Debt Model

In the equity linked mortgage calculation the following might apply:

Cost of land	£500,000	
Decapitalisation @ 5%	0.05	
Ground Rent pa		£25,000
Cost of Building (to include all on costs)	£1,000,000	
Less Allowances say	£200,000	
Net Cost of Building	£800,000	
Mortgage interest @ 10%	0.1101	
Over 25 years		£88,080
Total Interest and Rent pa		£113,080

Analysis:

Total Outlay - Land	£500,000	
- Buildings	£800,000	
(Net)	£1,300,000	

$$\text{Yield} = \frac{113,080 \quad \times 100}{1,300,000} = 8.7\%$$

As we know, the property investment and development market does not normally rationalise a development situation this way. The investment yield (in this case 8.7%) is judgemental based upon the intuitive knowledge of the market in terms of both market valuations and investment sentiment.

It is apparent from this type of analysis that many of the more recent debt-equity funding arrangements recognise the difference between building costs (which are in effect met by debt finance) and the potential equity growth which rests with the location of the land upon which the development sits.

In the example given the total rental income is £113,080 pa. What happens if rental values move upwards? Building costs move upwards? Interest rates on the development costs change? Other costs increase such as VAT or other taxation? The planning consent restricts the development?

It is because of these variables, and their wide interpretation, that the Lands Tribunal is sceptical of using residual land value appraisals as evidence of actual land values. Especially when a development will be underway for more than 1-2 years, such analysis can become wildly inaccurate which is why a cashflow approach in such situations is far more appropriate. The design of the building created may also influence the value of the site.

However for the investor and/or developer, despite the Lands Tribunals edict, a decision has to be made whether to proceed with development.

12.1.2 The Problems of Market Data and Land Values

One of the problems with any investment market is to know which data to record and how to interpret that data when making an investment decision. In the property market, over the last decade prime investment yields, as well as prime rents, have been recorded by several firms of surveyors. There have also been attempts to produce average rents and average yields but such analysis raises the question - "Average of What?" Average institutional investment yields or prime institutional investment yields are not necessarily indicative of development yields or the prospects for a successful development which may take several years to complete.

In putting forward the following analysis the problem of market data is recognised. However, it is suggested that this theoretical approach does identify trends in the market and suggests that land values are far more volatile than is generally recognised but do rise in value over time. The problem is that investors in land or even life expired property rarely disinvest at a loss; they normally hold land and/or buildings until such a time as they can enjoy a significant return despite the cyclical behaviour of land values.

Data availability and reliability is one of the chief constraints in producing a whole range of property research and analysis. Whilst much attention has been paid to compiling and analysing databases of rental and yield information as previously mentioned, land values have been relatively overlooked. Residential and agricultural land value series are really the limit of what is regularly available over a sufficiently long time period to allow adequate analysis.

Assembling an index or database of land values is fraught with problems, not least due to the subjectivity of the market and the uniqueness of each deal done. If an index could be produced which was capable of being disseminated to a regional or city level, it would be a help in firstly understanding the dynamics of development activity and secondly in the identification of levels or areas of future opportunity. However one should not forget the sentiment of the market or even the entreprenurial determination of some developers and investors who believe they can outwit, sometimes successfully, market trends and wrest a market share from competitors despite a poor level of demand.

12.2.0 The Indexation of Land Values

An index of development land values (DLV's) can be produced for the office sector of the market, which through varying the input factors will be capable of showing movements at a national, regional and key city level. Following on from this, and using output from the Healey and Baker Office Rental Growth Model, an attempt is made to forecast DLV's for two contrasting office markets as well as forecasting at a national level. As previously stated, such analysis is a pre-requisite to understanding the influence of design on a financial appraisal.

The residual method of calculating development land values has been employed to produce an index, the input assumptions for an office development are set out as follows:

Input Variables and Assumptions

The development is assumed to be an office block of 12,000 sq ft gross, with a lettable floor area of 10,000 sq ft.

INPUT COSTS:

Site Purchase Costs:	Legal fees	0.50%
	Stamp duty	1.00% (2.00% pre 1984)
	Agents fees	1.00%
	VAT	15.00% of fees
Development Costs:	Architects	5.00%
	Engineers	2.50%
	Q S	3.00%
	Other	2.00%
	VAT	15.00% of fees

Finance Costs:	Base interest rate at period start plus 2%, charged on half of costs for an 18 month period, taken as three 6 month periods with the interest rate applicable at the start of each.	
Letting Costs:	Agents	10.00% of rental
Developers Profit:	25.0% of costs	
Contingency Allowance:	10.0% of costs	

These are the values generally taken to be standard for development appraisals. The residual land value calculation is a widely used measure of development feasibility, the attributes of which are adequately covered in other texts (Darlow 1982-1987).

Input data is derived from a variety of sources. Rental data is extracted from the Healey & Baker PRIME rental index and future rents from the H & B office rental growth model (unpublished).

Construction cost data is taken from the RICS BCIS survey, as are the forecasts up to 1990. Forecasts of economic variables are taken from several econometric and forecasting sources.

The index is adapted for sub-national markets by adjusting the input variables. A prime rental series specific to the sub-market in question is introduced, alongside a corresponding list of prime development yields. Finally, a weighting is given to the building cost index to reflect local conditions. This weighting is taken from BCIS statistics.

For the purposes of this analysis the City of London will be analysed as the first distinct market and central Birmingham as the second.

12.3.0 Residual Office Land Values

The results of this attempt to produce a series of residual land values are set out in Table 12.3.1. These appear to be encouraging in that they display a high degree of variability and can also be justified in the context of trends evident in any one market.

Table 12.3.1 shows prime office development land values as derived from the residual calculation time series, in cash terms.

The dominance of the City of London is clearly shown in figure 12.3.1 with development land values 8 times those seen nationally. The pattern for the three markets is broadly similar, with an upturn in rental growth in the early 1980's combining with a decline in building costs to produce prolonged growth in land values in all areas.

Table 12.3.1

Office Development Land Values in the City of London, Birmingham and Nationally (Average)

Date J=June D=December	National £	City of London £	Birmingham £
J1977	56,767	664,605	-59,319
D1977	87,486	763,357	-33,383
J1978	89,137	790,341	-18,492
D1978	106,805	841,983	-24,878
J1979	106,627	913,456	-48,483
D1979	55,638	1,038,405	-109,564
J1980	106,918	1,141,461	-24,220
D1980	185,837	1,346,179	43,762
J1981	232,228	1,440,490	96,662
D1981	276,925	1,521,206	113,528
J1982	264,772	1,523,221	123,092
D1982	288,835	1,654,306	130,901
J1983	284,913	1,518,344	109,342
D1983	250,902	1,382,843	116,988
J1984	247,454	1,464,634	93,775
D1984	223,444	1,429,765	50,956
J1985	202,218	1,496,447	12,937
D1985	198,782	1,881,202	25,462
J1986	208,367	2,105,714	19,459
D1986	233,570	2,790,732	35,167
J1987	271,208	3,378,880	-2,212
D1987	328,689	3,771,485	-17,078
J1988	386,814	3,796,517	82,103
D1988	538,815	3,980,483	202,347

In the London market this was followed by a period of stagnation in spite of the low cost of borrowing. This was due to poor rental growth and yields increasing in 1982. It was not until late in 1985 when rental growth began to accelerate in the run up to "Big Bang" and interest rates peaked, that land values began to once more out grow the national and provincial market averages. Prime development land values had grown from £1.5million in 1985 to nearly £4 million in 1988.

The most striking feature is the negative values portrayed in Birmingham in the late 1970's and again in 1987. Whilst negative land values are largely a theoretical concept, what can be deduced from this in the case of Birmingham is that the city has offered a highly unattractive environment for office development over much of the past 11 years. When rental values are low and investment yeilds high, the gross development value may be unsufficient to pay for the cost of construction, hence a negative land value.

Many peripheral markets suffered a large over supply of office space in the late 1970s which had a consequently dampening effect on development opportunities. Whilst rental growth accelerated in 1978 to ease this situation somewhat, rapidly advancing interest rates which moved from 5% in 1977 up to 17% in 1979 halted the trend towards feasibility, with a sharp reduction in land values evident in 1979. However, this trough was short lived and increasing rents, a fall in yields and the aforementioned decline in building costs produced strong growth. This resulted in positive development land values in Birmingham in 1980. Whilst growth moderated in 1981 and 1982, it remained stable until 1984. However the following downturn in land values was more severe and longer lived than for the London market due to rising building costs at a time when rental values, until 1987, showed very little upward movement.

By 1987 the lack of rental performance in the Birmingham Market had led to yields being large enough to once again create negative land values, despite interest rates being at their lowest level for a decade. However, the ripple effect of growth away from London reached Birmingham just at the time that the London market itself was slowing in late 1987. The expected combination of falling yields and rapid growth brought about a more favourable investment climate than had been seen in Birmingham for more than a decade though growth remained well below the national average. The progression of development land values demonstrated by this analysis illustrate the dynamism of the development equation as well as the thin line determining financial feasibility for many provincial markets. The City of London is obviously a much stronger market but the sheer level of land values can be a deterrent to development in itself. Whilst these series may not exactly reflect actual development values, they do clearly indicate the feasibility of development at any one point in time.

12.3.2 An Index of Development Land Values

Table 12.3.2 depicts the index of development land values derived from the previously described time series of cash values. Whilst ignoring the absolute level of values in any one location, this does clearly show the disparity in growth seen between different markets.

Table 12.3.2
Office Development Land Values Indices

Date J=June D=December	National	City of London	Birmingham
J1977	100	100	100
D1977	154	114	143
J1978	157	118	168
D1978	188	126	158
J1979	187	137	118
D1979	98	156	15
J1980	188	171	159
D1980	327	202	273
J1981	409	216	362
D1981	487	228	391
J1982	466	229	407
D1982	508	248	420
J1983	501	228	384
D1983	441	208	397
J1984	435	220	358
D1984	393	215	285
J1985	356	225	221
D1985	350	283	242
J1986	367	316	239
D1986	411	419	259
J1987	477	508	196
D1987	579	567	171
J1988	681	571	338
D1988	949	598	541

The City of London shows a much smoother and sustained growth path than either the national or Birmingham markets. Indeed growth had been fairly constant since 1977 at a compound rate of around 13% up until the rapid rise in demand and rents in late 1986. Growth however had been stagnant, and mildly in retreat, over the period 1982 to 1985 but the relative level of this was less than in other markets.

This milder reaction to the depression in construction activity in the mid 1980s resulted in the London market producing a growth rate in land values over the period in excess of Birmingham in 1985 and greater than the national level in 1986. However the current moderation in growth has resulted in the City's growth between 1977 to 1988 at 16.8% once more falling behind the national average

(21.6% compound) and being only moderately higher than that seen in Birmingham (15.8%) over the same period. These rates of growth in land value appear to justify the use of 5% as the long term investment yield in the valuation example set out earlier in this paper.

Analysis of these index numbers shows the following land value growth per year from 1977 to 1988:

National Average	22.6%
City of London	17.6%
Birmingham	16.6%

These figures illustrating the growth of land values for the office market are reinforced by analysis of actual land values between 1977 and 1988 in the industrial land market. (Healey & Baker 1988).

This survey found that land values from industrial use increased by 16.4%pa over the 11 years. Where land had a change of use from industrial use to alternative use, the following rates of growth were apparent:

High Tech/Mix Business Use	19.19%
Retail Warehouse Use	27.5%
Food Store Use	34.6%

The path of office development land value growth nationally has been much more dramatic and volatile than in the City of London. The rapid downturn in 1979 and again in 1985 bear witness to this. With particular respect to the Birmingham market, this sporadic growth is not so much a reflection of falling land values, but rather a decline in the feasibility of development. Many such cities experienced long periods in the late 1970s and mid 1980s when over supply and limited rental growth rendered development unprofitable and indeed left many office blocks unlet.

The lag in growth rates across the country is particularly noticeable in the post 1985 development boom. Unsurprisingly the City of London was first to witness an acceleration in land values, in 1985. The national market was next to display growth, lagging London by one year. Finally, 18 months later, Birmingham is seen to begin to enjoy rapid growth.

The patterns evident in these indices are both interesting and revealing. The implications of the trends depicted for both the timing and the direction of investment decisions are potentially highly important meriting further attention and need to be considered in relation to the Property Investment Design Appraisal Model which is discussed later.

12.3.3. Site Value as a Percentage of Development Value

Table 12.3.3 indicates that portion of the gross development value (less site acquisition costs) which is attributable to the value of the site. Again it is highly noticeable that the responsiveness of each market varies markedly. However, it is also notable that the most volatile markets are the ones in which land values represent a relatively lower portion of the total development value. This may be a reflection of the continuity and stability engendered by high land prices or rather by the factors which cause them.

Table 12.3.3
Land Values as a Percentage of the Total Development Values

Date	National	City of London	Birmingham
D1977	14.41	42.03	-9.07
D1978	13.46	36.83	-5.01
D1979	6.27	36.13	-21.34
D1980	16.65	40.46	5.49
D1981	23.03	44.08	13.15
D1982	23.80	46.93	14.57
D1983	21.15	43.80	12.96
D1984	18.41	42.55	5.94
D1985	16.27	45.83	2.94
D1986	18.56	51.46	4.04
D1987	21.55	51.43	-1.95
D1988	24.64	48.66	13.37

With respect to Birmingham, it is again evident that the viability of development is defeated by the high opportunity cost of money in the late 1970s and again in 1987. By 1988 land values in this market had now reached a similar level in terms of portion of total development value to that seen in 1982 to 1983. One could therefore argue that some tailing off in the rate of growth should be expected. However this is not the case as a long term trend exists reducing the relative value of the actual building, compared to that of the land, as a percentage of the total value.

In the City of London, land has increased as a portion of total development value by around 0.6% per annum. In Birmingham, the growth has been of the order of 2.72% (due to the large negative value at the period start) and at 1.25% nationally. In other words, an increasing amount of the value of any property investment is to be found in the land itself. Following this logic one finds that the building is increasingly becoming an "expendable" part of the total investment value - a subject which is discussed later.

12.4.0 Forecasts of Office Development Land Values

Table 12.3.4 indicates the forecast movement in land values in each market. These should be viewed alongside the caveats that with all forms of forecasting the following must be remembered:

1. One is assuming that the historic data input to the model is accurate.

2. The judgement of both the model builder and the forecaster will influence the validity of the results.

3. One is assuming that the market will continue to operate in the future as it has in the past, and that its stability will not be disrupted.

4. The forecasting is respresentative of only one moment in time and the information available at that time.

The forecasts produced are based on the information available as at 31st March 1989 using the Healey & Baker Rental Forecasting Model (unpublished).

Table 12.3.4
Forecasts of Development Land Value Indices

Date	National	City of London	Birmingham
D1988 (Actual Index)	949.17	598.92	541.12
J1989	1169.87	568.11	773.97
D1989	1367.61	558.51	983.23

It can be seen that the present dormancy in the City of London will continue but may then once more accelerate. A tightening in the supply and demand balance and increased confidence in the markets growth potential will bring about a return to the order of land value rises seen in the period 1985 to 1987 and later in the 1980s.

Table 12.3.4 reveals a different story for the national and Birmingham market. Current high growth will persist into 1990, but may then reduce due to slow down in rental growth and a tightening in the yield position. However this should be short-lived and growth will return at high rates in the mid 1990s. The table also indicates the continued performance of office markets outside the City of London. Forecasting future rates of land value growth is a pre-requisite to a more explicit method of analysis as explained later with the Property Investment Design Appraisal Model.

Whilst the recent introduction of Value Added Taxation to building construction has not been included in this analysis, the forecast could be adapted for a variety of VAT scenarios.

12.5.0 The Future of Land Value Indices

Whilst the analysis detailed above is as yet in its infancy, the results would appear to support the principle.

1. As the analysis shows there has been an interesting difference in recent years between the investment performance of property generally and the change in land values. Land values have been theoretically far more volatile.

2. There are clear structural differences between the two markets analysed, the City of London and Birmingham, which helps to provide a clearer picture of past performance of land values.

3. In all markets the land value as a percentage of gross development value has been slowly rising. This implies that the problem of obsolescence is less important than has previously been appreciated implying that buildings are increasingly expendable over the long term.

4. As a method of forecasting future land value changes, the indices are a tool to help understand the feasibility of development and the timing of investment decisions. They are an important element of the Property Investment Design Appraisal Model discussed later in this chapter.

12.6 Land Values, Design and the Equity/Debt Model

The major input factor which has not been examined in the analysis of land values and indexation is that of design. It is assumed that design is a homogenous factor which does not vary from one building to another or one time period to another. This is clearly not the case; design is different for every building and has a different level of importance at difference stages of the market as illustrated by the analysis in Chapter 10 of three buildings.

In the Property Equity-Mortgage Model example used in Section 12.1.1 to demonstrate the relationship between gross development value (£1,300,000), the building cost (£800,000 net) and the land value (£500,000), there was no analysis of the design factor. The following is an analysis of how the design factor could be bought into financial appraisal.

12.7 Equity/Debt Scenario One

The first scenario to reconsider is the situation where less money is spent on the building which reduces the mortgage liability using the Equity/Debt Model (see 12.1.1).

Ground Rent		£25,000
Net Cost of Building	£700,000	
Mortgage at 10% over 25 years	0.1101	£77,070
Total Interest and Rent per annum		£102,070

$$\text{Yield} = \frac{102.070}{1,200,000} \times 100 = 8.5\%$$

Because there is less expenditure on the property one would expect the investment yield to rise. This does not occur. It falls from 8.7% to 8.5%. Using this technique we have a way of adjusting the overall value of an investment if a low amount has been spent on the building, but the method produces the totally wrong answer.

The failure of this apparently simple solution also does not take into account the stage in the property market's cycle at which the assessment is made, nor does it consider that it is the quality of the design, not the amount spent, which may be far more important.

12.7.1 Equity/Debt Scenario Two

One way round this latter problem, again using the Equity/Debt Model, is to assess the quality of the design and suggest that the building be written off over perhaps 20 years, not 25 years.

Ground Rent		£25,000
Net Cost of Building	£800,000	
Mortgage at 10% over 20 years	0.1175	£93,968
Total Interest and Rent per annum		£118,968

$$\text{Yield} = \frac{118,968}{1,300,000} \times 100 = 9.15\%$$

This analysis does appear to be valid; a worse building which is written off over 20 years not 25 years has a higher yield, 9.15% compared with the original 8.7%.

12.7.2 Equity/Debt Scenario Three

The property market does not analyse investments the way illustrated by Scenario Two. It simply takes "a view" of the investment and judgementally arrives at as "All Risk Yield" which sweeps up a number of factors such as location but also an appreciation of the building's design. This was referred to in Chapter 4, Section 4.10. The method of appraisal used in this analysis could improve that judgement but it would be necessary for the investors to have a clear understanding of:

the likely land value,

the likely growth in land values,

the capitalisation rate for the land element as well as a knowledge of a mortgage interest rate.

If the mortgage interest rates changed to 12%, the following would apply:

Ground Rent		£25,000
Net Cost of Building	£800,000	
Mortgage at 12% over 25 years	0.1274	£102,000
Total Interest and Rent per annum		£127,000

$$\text{Yield} = \frac{127{,}968}{1{,}300{,}000} \times 100 = 9.8\%$$

Once again this analysis produces a meaningful initial yield; it has increased to reflect the higher mortgage costs of replacing the investment construction costs.

A pre-requisite to valuing the land and building separately in this way is to firstly have an understanding of land value growth (hence the value of the land value indicies as discussed) and secondly an understanding of design. However, the analysis so far using the Equity/Debt Model has not taken into account the state of the investment market in relation to its cyclical behaviour and the influence of design.

12.8. The Refurbishment - Rental Growth Model and Depreciation

The Sykes (1984) model discussed in Chapter 4 looks at the problem from the concept of re-injecting cash into an investment. His objective was to analyse property investments to see what implied growth would be necessary for a given opportunity cost of money, initial investment yield and known percentage of initial value which would be re-invested at periodic stages. The model is derived from the Rational Model.

He states: "Suppose that refurbishment costs, when due are anticipated to be R percent of the then refurbished market capital value".

In the examples used above it is assumed that the total cost of the building is written off. Sykes (1984) suggests that it might be possible to quantify the refurbishment percent but does not suggest how this might be achieved.

The Sykes model also makes other assumptions which in practice are difficult to quantify. He assumes that y, the initial yield is known, d the opportunity cost of money is known and that g, the implied rental growth rate can be calculated for a given rent review pattern. Not only does the model assume a long term constant pattern of rental growth (something rarely achieved) but the model "envisages" that the investor will know how often refurbishment is likely to take place.

The net present value of the investment in the Sykes model is found by subtracting the NPV of the refurbishment expenditure (CR) from the NPV of the investment assuming no refurbishment (C). But the large number of assumptions make the model difficult to use in practice despite the fact that, as a theoretical tool, it clarifies several issues.

One contradictory matter relates to the NPV of the investment assuming no refurbishment. This is totally unrealistic. Whilst the market may not rationally state when and how much refurbishment may be necessary, sentiment of the market results in the initial All Risks Yield being adjusted to account for such a future eventuality.

Whilst the Sykes model, as an aid to understand design and building refurbishment, is a starting point, a more useful tool is necessary. The Baum (1988) Depreciation and Appraisal Model is also a useful starting point, but once again it does not recognise the difference between the value of the land and the value of the building. Nor does it take into account the cyclical nature of the market, (see Chapter 4). It is set out as:

$$k = C + p - (gn - d)$$

Where: k = capital value

C = risk free inflation prone opportunity cost interest rate

p = risk premium

gn = rental growth of new buildings

d = depreciation in the rental value of the subject property

Whilst both the Sykes (1984) and Baum (1988) models are helpful, unlike the Property Investment Design Appraisal Model discussed later, they are not easy to apply for investors trying to appraise the financial implications of an asset.

12.9 The Rational Model

The Rational Valuation Model, (McIntosh & Sykes 1984) which was referred to in Chapter 4 and in section 12.0 of this chapter, for a freehold investment in its simpler form is as follows:

$$c = \frac{r}{d} - \frac{r}{d(1+d)^n} + \frac{R(1+g)^n}{y(1+d)^n}$$

Where: c = Gross Capital Value

r = Current Rent

d = Discount rate/opportunity cost of money

n = Number of years to the next rent review

R = Estimated Rental Value

y = All Risks Initial Rack Rented Yield

g = Implied Rental Growth Rate

$$g = \left[\left[\frac{d - y}{d} \quad (1 + d)^{5} + \quad \frac{y}{d} \right]^{1/5} \right] - 1$$

Source : McIntosh & Sykes (1984)

This simple form of the model can be adapted in various ways, for instance:

to take into account long dated rent reviews,

to value leasehold investment,

to find the rent adjustment (enhancement) factor (assuming long dated reviews),

to find an adjusted yield for long dated reviews as well as being used as a base

to derive the Refurbishment-Rental Growth Model previously discussed.

It was also previously explained how the Property Equity/Debt Model could be adapted to take into account poor design, either by shortening the repayment period of the mortgage or adjusting the mortgage interest payment. Such adjustments, however, do not take into account the state of the property market. For instance, if there were a recession and a badly designed building remained empty and produced no rent, such analysis would have little value.

Alternatively, if there were a situation of strong office demand and rents were rising very rapidly, again such analysis would be of limited use.

12.10 The Amended Rational Model

The Rational Model can be re-written as:

$$c = \frac{r}{d} - \frac{r}{d(1+d)^{n}} + \frac{R\,(1+g)^{n}}{y\,(1+d)^{n}} - \frac{R\,(1+g)^{n1}}{y\,(1+d)^{n1}} + \frac{R\,(1+g1)^{n1}}{y1\,(1+d1)^{n1}}$$

In this arrangement, although R still represents the Estimated Rental Value of the building, there are different investment yields (y and y1), different discount rates (d and d1) and different implied growth rates (g and g1). This arrangement is capable of inputing different data, depending on the investment situation. Design can be an influential factor in assessing that input information. Whilst n is the number of years to the first rent review, n1 is n + 5 years, the time to the next rent review. The model can then be used for a wide variety of short term scenarios yet recognising the long term trend.

12.11 Design Appraisal Model Scenario One

In this scenario there is a recession and the chances of letting badly designed buildings for 2 years are unlikely, largely due to the poor level of demand. Therefore r = zero and the first part of the equation does not exist.

If it is assumed the ERV = £100pa but the All Risks Yield (y) is 8% and the short term discount rate (d) 14%, the implied rental growth (g) is 6.9% for a 5 year rent review pattern.

Over the longer term the ERV remains at £100pa but the All Risks Yield (y1) is 6% and the long term discount rate (d1) is 12%. The implied rental growth (g1) is therefore 6.67% for a 5 year rent review pattern.

$$c = \frac{100\ (1.069)^2}{0.08\ (1.14)^2} - \frac{100\ (1.1069)^7}{0.08\ \ (1.14)^7} + \frac{100\ (1.067)^7}{0.06\ (1.12)^7}$$

$$c = 1099.147 - 796.93 + 1187.06 = 1489.27$$

The initial yield (that is the rent as a percentage of the capital value) is 6.7% except that the investor would need to wait 2 years to enjoy that return.

One of the problems with this approach is that the assumed relationship between the investment yield, the discount rate and the implied rental growth rate may not be valid. In Scenario One the short term rental growth rate is 6.9% which is higher than the long term implied rental growth rate of 5.67%.

One way around this dilemma is to treat the short term income as fixed in which case y (the investment yield over the short term) is the same as d, but also make some assumptions regarding rental growth. In the case of Scenario One, due to the poor design of the building, the investor may decide for instance that no rental growth is likely over the first 2 years. The calculation would therefore be as follows:

$$c = \frac{R}{d\ (1+d)^{n}} - \frac{R}{d\ (1+d)^{n1}} + \frac{R\ (1+g)^{n2}}{y\ (1+d)^{n2}}$$

$$c = \frac{100}{0.14(1.14)^2} - \frac{100}{0.14(1.14)^7} + 1187.06$$

$$c = 549.62 - 285.45 + 1187.06$$

$$c = 1{,}451.22$$

This result is marginally lower than the earlier result (-2.5%) but conceptually more accurate.

12.12 Design Appraisal Model Scenario Two

In this scenario it is assumed that the building is fully let but is poorly designed. The market has been very active such as in 1978/9 and again 1988/9 but there are signs that the market will see a fall of demand over the next few years.

As with Scenario One, it is assumed there is a rent review (rather than a new letting) in 2 years time, but the investor has to take into account the problem of the poor design of the building at that time. Although the estimated rental value (ERV) is £100, the rent passing agreed 3 years previously, is £80pa. Market analysis suggests very strong rental growth over the short term but, due to poor design, little rental growth over the medium term but in the long term more normal patterns of growth will return.

The amended Rational Model can be written as follows:

$$c = \frac{r}{d} - \frac{r}{d(1+d)^{n}} + \frac{R\,(1+g)^{n}}{y\,(1+d)^{n}} - \frac{R\,(1+g)^{n1}}{y\,(1+d)^{n1}} + \frac{R\,(1+g1)^{n1}}{y1\,(1+d1)^{n1}}$$

Alternatively, in shortened form:

c = f (short term) + f (medium term) + f (long term)

$$c = \frac{80}{.14} - \frac{80}{.14(1.14)^{2}} + \frac{100(1.0886)^{2}}{.06(1.14)^{2}} - \frac{100(1.0886)^{7}}{.06(1.14)^{7}} + \frac{100(1.0463)^{7}}{.08(1.12)^{7}}$$

c = 131.73 + 1519.76 - 1206.68 + 776.2

c = 1,221.02

The adaptation of the model enables the short term strong rental growth and the low investment yields (6%) to be taken into the calculation. However, long term it is known that this yield is unrealistic for a poorly designed building, hence the use of the 8% long term investment yield and the more realistic discount rate and level of rental growth. For a better designed building an investment yield of 7% might be applicable which would imply stronger rental growth. This would create a higher capital value.

As will be discussed there are faults with this approach especially the use of 6% over the medium term as the investment yield.

12.13 The Rational Model and Design

Valuers by tradition using conventional valuation models judgementally adjust the investment yield of a property according to their perception of the market at any one moment in time. Not only is this judgement intuitive but there is no attempt to segment out the influence building design may have on the investment.

It is important to distinguish between "Market Valuation" and a calculation of "Investment Worth". The former will continue to obey the intuitive knowledge of the valuer. The latter appraisal method should take a more rational approach. It is this latter concept which should take into account factors such as the cyclical state of the market (as discussed in Chapter 2) and the influence of design (as discussed in Chapter 11) which examined the results of the survey work undertaken for this thesis.

The two approaches, the Equity/Debt Model (see 12.1.1) and The Rational Model (see 12.9.0), can then be combined. The Equity/Debt Model replaces the long term element of the equation. First it is necessary to estimate, from current transactions, the likely rental value attributable to the land. In the earlier Equity/Debt calculations the rental value attributable to the land was in the region of 25%. Clearly this percentage will vary depending on the location of the building. In Birmingham for instance a long term percentage of only 10% might be appropriate - a matter which will be examined later.

12.14 The Property Investment Design Appraisal Model

The Property Investment Design Appraisal Model (PIDAM) combines the Equity/Debt Model (see 12.1.1) and The Rational Model (see 12.9.0) (McIntosh & Sykes 1983), but also adds a "long term" element.

It may be set out as:

$$c = f(\text{short term}) + f(\text{medium term}) + \frac{Rl\,(1+gl)^{n1}}{y(1+d)^{n1}} + \frac{Rb}{(1+d)^{n1}}\;\frac{1-(1+d)^{\frac{1}{N}}}{d}$$

Where: Rl = the rent attributed to the land

Rb = the rent attributed to the building

$$c = 131.73 + 1519.76 - 1206.68 + \frac{25(1.0886)^{7}}{.06(1.12)^{7}} + \frac{75}{(1.12)^{7}}\;\frac{1-(1.12)^{\frac{1}{10}}}{0.12^{7}}$$

c = 131.73 + 1519.76 - 1206.68 + 341.46 + 191.68

c = 977.95

Where: The Initial Yield = (80/977.95) x 100 = 8.2%

The Reversionary Yield = (100/977.95) x 100 = 10.2%

The most important point to note about the PIDAM is that it is flexible; it can be used in a wide variety of ways.

In calculating the value of the medium term value a yield of 6% was used (see 12.12). It could be argued (McIntosh & Sykes 1983) that the discount rate of 14% would be more appropriate because it is theoretically known income for which there will be no growth between the 2nd and 7th year.

The writer's opinion is that this would under capitalise this tranche of income. The reason for applying an All Risks Yield of 6% is to reflect, as near as is possible, the markets capitalisation rate.

The same yield of 6% has been used to capitalise the rent attributable to the land. It is possible that a lower yield could be used, depending on the location of the land. The very fact that a variation could be used reflects the models flexibility.

The same applies to the value of gl (the growth of the land value) which has been put in at 8.86%pa. As will be discussed in Section 12.15, a much higher yield could be used.

In the example used above the mortgage term has been set at N = 10 years. This depends on the age of the building and the assessment of its design, using the form of analysis set out in Chapter 10 Table 10.12. A modern well designed building has a longer potential life and N = 20 years may be more appropriate as will be discussed in Chapter 13.

A point which also needs considering is the value of Rb, the rent attributable to the building. The percentage of the total value attributable to the building will be examined in Chapter 13. There is an argument however, that Rb should be inflated by a growth factor but there is equally the counter argument that the value of the building will have depreciated over the time span, one factor cancelling out the other.

It will be observed from the previous pages that the concept of R/y is based on current valuation models but has been incorporated in a far more explicit way. It should be noted that f(short term) and f (medium term) are adaptations of the Rational Models. The f(long term) element is an adaptation of the Equity/Debt Model.

The full Property Investment Design Appraisal Model is restated as follows:

$$c = f(\text{short term}) + f(\text{medium term}) + f(\text{long term})$$

$$f\ (\text{short term}) = \frac{r}{d} - \frac{r}{d(1+d)^{n}}$$

$$f\ (\text{medium term}) = \frac{R\ (1+g)^{n}}{y\ (1+d1)^{n}} - \frac{R\ (1+g)^{n1}}{y\ (1+d1)^{n1}}$$

$$f\ (\text{long term}) = \frac{Rl\ (1+gl)^{n1}}{y\ (1+d2)^{n1}} + \frac{Rb}{(1+d2)^{n1}} \qquad \frac{1 - \frac{1}{(1+d2)^{N}}}{d2}$$

c = gross capital value

r = Initial Rent Received

R = Estimated Rental Value

y = All Risks Yield

g = Rental Growth

gl= Long Term Rental Growth of the Land

Rl= Rent Attributed to Land

Rb= Rent Attributed to Building

n = Years to First Rent Review

n1= Years to Second Rent Review

N = Years of Mortgage (Debt Repayment)

d = Short Term cost of money

d1= Medium Term cost of money

d2= Long Term cost of money and Implied Mortgage Rate

The Property Investment Design Appraisal Model has taken into account three different elements of the appraisal which influence value; the immediate income, the medium term income, influenced largely by the cyclical market, and the long term income reflecting both the land value and building value.

Firstly, the first 2 years (the short term) have been valued as fixed income. Clearly this could be more or less than 2 years and in the case of an empty (perhaps badly designed) property, the income could be zero.

Secondly, the next five years (the medium term) have taken into account the strong rental growth over the first two years. This could in different circumstances, be put in as zero growth and the investment yield varied according to market conditions. This element of the model can be adapted to reflect the cyclical nature of the market.

The third element reflects the long term value of the asset spliting the investment into the land element and the building element. It has been able to explicitly, rather than implicitly, take into account the value of the building and its design.

Chapter 13

APPLYING THE PROPERTY INVESTMENT DESIGN APPRAISAL MODEL

Chapter 13

APPLYING THE PROPERTY INVESTMENT DESIGN APPRAISAL MODEL

13.0 The Objective

The objective of this chapter is to draw conclusions from the earlier National Office and National Office Design Surveys and relate them to the Property Investment Design Appraisal Model (PIDAM).

In the earlier part of the thesis building design was considered in relation to the Aesthetic, Functional and Cost-in-Use aspects of design.

The two surveys have shown that office tenants are only vaguely aware of the aesthetic aspects of design, especially the external appearance of office buildings which, in the survey, was ranked 11th out of eleven different aspects of design in terms of their perceived importance.

The surveys have clearly shown that tenants are aware of the functional aspects of the design of the building they occupy; a high level of design dis-satisfaction was apparent with certain types of office tenant, as has previously been discussed.

The survey results however, clearly also discovered that many tenants have only a very poor idea of the cost of occupying their office buildings. For this reason, supported by the poor results which emerged from the survey, to calculate the cost-in-use of office buildings is almost impossible.

The question is whether the National Office and National Office Design Surveys together enable the PIDAM to be applied. Does the information which emerges from the field work undertaken in connection with this thesis assist in the process of appraising property investments?

13.1 Accounting for Design.

The surveys have produced a much clearer picture of the level of dis-satisfaction with office design, especially the functional aspects, as at the date of the surveys - 1985 and 1986. The survey results show that, not only is there dis-satisfaction taking the nation as a whole but, certain sub-markets within the national market show varying levels of dis-satisfaction with some areas of design, which is greater than the national average. Testing these results has shown the results to be statistically significant.

The dis-aggregated analysis of the results based on the age of the building in particular proved the hypothesis that older buildings have a higher level of design dis-satisfaction than younger buildings. These results were further confirmed by the survey of rental values in relation to age undertaken in the Guildford office market and, in a separate analysis, across Great Britain using the results from a range of property investment porfolios.

The problem in the market, as far as depreciation was concerned in the 1970s (and arguably has not changed much since) is summed up by Bowie(1989):

"Assets were being stated at the historic cost while incomes included the impact of inflation so that apparent returns were boosted to unrealistic levels.

Strict accounting conventions demand that a deduction should be made from profits to represent a realistic write-off over a period of time.

The introduction of current cost accounting would have brought a realism into financial statements but profits would have been hard hit particularly in the case of property companies. The situation was worsened as the treasury still refuses to allow depreciation as a legitimate tax deduction.

The rental income flow from all properties contains a significant element - perhaps 25% in some cases - to cover depreciation. If this were to be set aside in the profit and loss account, dividends would be hit and highly geared companies would possibly show a loss.

The result has been a fudge between the accountancy profession and property owners. Capital reserves are adjusted to reflect changes in market values and no provision is made for the gradual loss of capital invested in the building."

13.2 Valuation and Appraisal Techniques

It is this very problem that the PIDAM is aiming to redress. The investment worth of office property investments is not reflected in the market valuation methods used in practise. The PIDAM provides a method by which property investment appraisal can rationalise the haphazard way by which properties are currently valued.

Conventional wisdom assumes that design influences the value using implicit rather than explicit methodology. The PIDAM requires an explicit approach to investment appraisal and could ultimately be adopted as an acceptable valuation model rather than as simply an appraisal technique.

The objective is therefore to use the findings from the field work undertaken in connection with this thesis to see whether a more rationalised approach can be taken to inputting factors into the PIDAM so that design is explicitly taken into account.

13.3 The Application of the Property Investment Design Appraisal Model

The analysis so far has considered the PIDAM in a theoretical context. The objective of the next few pages is to illustrate how it may be applied in a pragmatic way.

For the long term property investor he/she is continually being asked to appraise the investment worth of property investments. His starting point is normally the market price at which either the investment is being offered on the market to him or the market price (valuation) which is placed on the asset held in the portfolio.

This latter event should be based upon a valuation carried out at "arms length" by an independent firm of valuers although some firms may value some of their portfolio on a rolling programme basis internally, with only a proportion of the portfolio being valued by an external firm of valuers.

His objective is to decide whether that valuation accurately reflects the investment worth of the asset; in other words, is the market over or under valuing the asset in terms of its potential investment performance?

Valuations which follow are actual investments held by clients of Healey & Baker. They set out the valuations conventionally undertaken as at March 1989, the year end of the two respective portfolios concerned.

The Strand, London building is both well located and well designed having only been completed in 1986 and became let immediately. Although not in the City of London it is believed that the relationship between the land value and building value is similar.

Victoria Square, Birmingham, on the other hand is very different. Although it is in the central business district of Birmingham, the building is poorly designed in that it is over developed in terms of the site capacity, the front entrance is poorly designed and, although multi-let, it is extremely difficult to divide up to give each tenant his/her own identity. Internally the structure/shape does not easily divide into different lettable areas.

Using the type of assessment set out at the end of Chapter 10, it would not rate very highly. Although completed in 1984, it did not let until 1987, the investor having to carry the development cost of over £12 million for 3 years with no rental income!

Valuation 13.3.1
The Strand, London SW1 (26,877sq ft) (Valuation as at March 1989)

Current Income	£478,019	
YP in perpetuity @ 6%	16.66	
		£7,966,983
Estimated Rental Value	£955,065	
Less Present Rent	£478,019	
Potential Increase	£477,046	
YP in perpetuity deferred		£6,972,822
2¼ years @ 6%		
Gross Capital Value		£14,939,805

Net Capital Value (After Purchase Costs)		£14,539,956
ie: Market Price		
Valuation Reported to Client (and recorded in accounts)		£14,000,000

Valuation 13.4.2
1 Victoria Square, Birmingham (Valuation as at March 1989)

Current Income	£833,566	
YP in perpetuity @ 6.75%	14.81	
		£12,349,125
Estimated Rental Value	£1,307,375	
Less Present Rent	£833,566	
Potential Increase	£437,809	
(in March 1992) *		
YP in perpetuity deferred	12.17	£5,768,391
3 years @ 6.75%		
Gross Capital Value		£18,117,516
Net Capital Value (After Purchase Costs)		£17,632,619
ie: Market Price		
Valuation Reported to Client (and recorded in accounts)		£15,500,000

* NB: This building has a number of rent reviews between 1990 and late 1992 - most in 1992.

13.4.0 The Application of PIDAM to The Strand, London

Applying the Property Investment Design Appraisal Model to the office building in The Strand reveals that the market's conventional valuation has under estimated the investment worth of the asset taking into account both the growth in land value which can be expected and the longevity of the well designed building.

For the owner of this asset the implication is that he should not sell it at the present time or, if being offered the investment at £14 million, he should acquire it. If he already holds the investment and he believes someone would acquire the asset for more than £15.7 million (which is much higher than the market value) he should consider disposing of the asset and acquiring an alternative investment.

13.4.1. Analysis of The Strand, London

Short Term:

$$\frac{478{,}019}{0.16} - \frac{478{,}019}{0.16(1.16)^{2\frac{1}{4}}} = £848{,}205$$

Medium Term:

$$\frac{955{,}065(1.0886)^{2\frac{1}{4}}}{0.06(1.14)^{2\frac{1}{4}}} - \frac{955{,}065(1.0886)^{7\frac{1}{4}}}{0.06(1.14)^{7\frac{1}{4}}} = £2{,}955{,}824.9$$

Long Term:

$$\frac{429{,}779(1.176)^{7\frac{1}{4}}}{0.06(1.12)^{7\frac{1}{4}}} + \frac{525{,}285.75}{(1.12)^{7\frac{1}{4}}} \quad \frac{1 - (1.12)^{\frac{1}{20}}}{0.12}$$

$$= £11{,}927{,}983.84$$

Gross Capital Value £15,732,013.74

Where: d - short term interest rate = 16%

d1 - medium term interest rate = 14%

d2 - long term interest rate = 12%

Rl = 45% of ERV

Rb = 55% of ERV

N = 20 year amortisation

gl = land value growth of 17.6%pa.

NB: Market Gross Capital Valuation = £14,939,805 (see 13.3.1)

13.5.0 The Application of the PIDAM to Victoria Square, Birmingham

Applying the Property Investment Design Appraisal Model to the office building at Victoria Square, Birmingham (see 12.17.3) reveals that the market's conventional valuation has over estimated the investment worth of the asset taking into account both the growth in land value which can be expected and the short term value of a poorly designed building.

For the owner of this asset, the implication is that he should sell it at the present time or, if offered the investment at £17.5 million, he should not acquire it. He should only acquire it if it is offered to him at less than £11.4 million.

13.5.1 Analysis of Victoria Square, Birmingham

Short Term:

$$\frac{833{,}566}{0.16} - \frac{833{,}563}{0.16(1.16)^{3}} = £1{,}872{,}109$$

Medium Term:

$$\frac{1{,}307{,}375(1.0886)^{3}}{0.06(1.14)^{3}} - \frac{1{,}307{,}375(1.0886)^{8}}{0.06(1.14)^{8}} = £3{,}908{,}576$$

Long Term:

$$\frac{130{,}737.5(1.176)^{8}}{0.06(1.12)^{8}} + \frac{1{,}176{,}637.5}{(1.12)^{8}} \quad \frac{1 - \frac{1}{(1.12)^{10}}}{0.12}$$

$$= £5{,}691{,}843.56$$

Gross Capital Value £11,472,528.00

Where: d - short term interest rate = 16%

d1 - medium term interest rate = 14%

d2 - long term interest rate = 12%

Rl = 10% of ERV

Rb = 90% of ERV

N = 20 year amortisation

gl = land value growth of 16.6%pa.

NB. Market Gross Capital Value = £18,117,516 (see 13.4.2)

13.6.0 The Financial Implications of Design

The application of the Property Investment Design Appraisal Model has been able to illustrate a method by which investors are able to appraise the investment worth of a long term investment either when they are considering acquiring an asset or when re-appraising an investment already within their ownership.

In the appraisal, design has been identified as an explicit element of the analysis both in relation to the value of the building as a percentage of the total asset value (the gross capital value) and in terms of the amortisation of the building.

In the case of The Strand, a well designed building, the building was amortised over 20 years after the intitial 8 year period when cyclical fluctuations in the market had been taken into account.

In the case of Victoria Square, Birmingham, a badly designed building, the building was amortised over only 10 years after the initial 8 year period.

Further analysis revealed that, if the building in The Strand had been badly designed and amortised over only 10 years the gross capital value would have fallen by only 3.6%.

If the building at Victoria Square, Birmingham had been well designed and amortised over 20 years, the gross capital value would have increased by 7.5%.

This analysis shows that the Property Investment Design Appraisal Model responds as one would expect; where the building represents a higher proportion of the total asset value, as in Birmingham, the capital appraisal is more sensitive to a change in the influence of design. In the case of The Strand, where the building represents a smaller percentage of the overall gross capital value, that capital value is less sensitive to a change in the influence of the building design.

13.7 A Summary of the Application of the Property Investment Design Appraisal Model

For the Property Investment Design Appraisal Model to be applicable, the investors must follow the following:

i. There must be a thorough understanding of the cyclical nature of the market, an aspect which, apart from the discussion in Chapter 2 is outside the scope of this thesis.

ii. There needs to be a thorough understanding of building design and whether the building being analysed is well designed or not.

The findings of this thesis have identified those areas of design which are going to be most critical in terms of tenant satisfaction.

iii. The investor must be prepared to value the asset over the short term, medium term and long term. The Rational Valuation Model can be adapted to this task to take into account the fluctuating cyclical nature of the property market over the short and medium term.

iv. The investor must assess the design, in terms of its most appropriate reconstruction period, and then build that information into the calculation using an equity/mortgage approach to the valuation by amortising the value of the asset attributable to the building. The land should be valued separately over the long term.

v. The investor must be prepared to adapt the input data used in the Property Investment Design Appraisal Model to test different scenarios. This approach clearly leads to the greater use of a computer based model and can guide the investor when to buy or sell office property investments.

13.8.0 The PIDAM and the Research Results

So far when applying the Property Investment Design Appraisal Model the results of the National Office and National Office Design Survey or the results of other field work have not been applied the appraisal.

Hypothesis III suggested that there was a relationship between age building design. It suggested that older buildings have a low value because they often have poorer design. The results of the field work as discussed in both Chapters 9 and 10 showed that this hypothesis was valid. Chapter 10 linked building value to design features by examining certain buildings. At the end of this chapter Table 10.12 showed how different design features could be codified in such a way that when an investor visited a building he/she could assess the relative merits of the building's design. At the present time surveyors/valuers have no specific method to rationally quantify the effects of good or poor design. Intuitive judgement is the order of the day.

Table 10.12 showed how, out of a maximum score of 130, the following score were obtained; CI Tower 69, Catherine House 96 and Millenium House 56. Whilst these results clearly show that Catherine House is far superior in terms of design, both the other buildings have produced results which reflect their unsatisfactory design.

Conventionally, in the property market, buildings are let for 25 years albeit with 5 year rent reviews to the then open market rental value.The concept behind this is that at the end of 25 years the life of the building will have expired and the land owner will then have regained vacant possession to enable rebuilding to take place.

The concept of 25 years is also important in terms of cashflow analysis in that by the 25th. year the net present value of the discounted rental interest will be negligible. For both these reasons 25 years is a starting point to apply the influence of good or bad design to the life of a building.

Using the scores derived from the analysis of Table 10.12, which was based on findings from the National Office and National Office Design Surveys, it is possible to estimate the theoretical life of the buildings in Kingston which can then be input into the PIDAM where N is the number of years over which the building is likely to be amortised having taken into account the short and medium term influences on the value of the investment.

In the case of Catherine House the score was 96. Therefore, 96/130 (the total possible score) multiplied by 25(the maximum life of the building) equals an implied life of 18.5 years. In the analysis which follows for illustrative purposes 20 years has been used.

In the case of Millenium House the score was only 56. 56/130 * 25 implies a life of 10.76 years. For illustrative purposes, the analysis which follows uses a life of 10 years.

13.9 Applying the PIDAM to the Kingston Office Market

Two office properties in Birmingham and London were used to show how the PIDAM could be applied and compared with actual asset valuations undertaken in 1989. These calculations showed that the property (that is the land AND the building) in Birmingham was apparently over valued and the London property was under valued.

The purpose of the following concluding analysis is to demonstrate how the PIDAM can be applied to office buildings in the same market geographically. The objective of such analysis is to demonstrate that the design element of a building does influence the market value of the property of which it is part.

The first requirement is to calculate the land value attributable to an office building in the Kingston area. For the following calculation all data used will be as at 1983 which is the year that Catherine House was completed and first let at a time when, as explained in Chapter 2, the economy was in recession and there was very little demand for office buildings. The purpose of the exercise is to establish the percentage of land value which might be attributable to a modern office property.

In 1983 the prime rent, the rent attributable to new well designed buildings, was perceived to be at £10 per sq. ft. per annum per net lettable area, for a building let on a modern lease with five yearly rent reviews and with the tenant fully responsible for repairing and insuring the premises.

At that time Catherine House let at a rent of £13 per sq. ft. yet Millenium House was still partially unlet despite having been built for a number of years yet available to let at £6 per sq. ft.. For the

purposes of the following analysis it is assumed that both buildings are of a similar size and that both have been, or are to be, let as a whole and not let to several tenants. Only by making such assumptions is it possible to apply the results of Table 10.12 and compare the effects of design on asset value.

13.10 Residual Land Value Appraisal : Kingston upon Thames, 1983.

Net internal area sq.ft.	10,000		
Est. Rental Value	£10		
Total Annual Rent	£100,000		
Years Purchase in perp.@ 7%		14.286	
Gross Capital Value			£1,428,000
Less purchase costs @ 2.5% = Market Price			£1,394,000
LESS Costs			
Gross Area	12,000		
Cost per sq.ft.	50		
Total contractor cost	600,000		
Prof. fees (arch.QS.Eng.)12.5%	75,000		
Total to finance	675,000		
Finance 12% 0.5*18mths.	60,750		
Contingency @ 10%	67,500		
Developers profit @ 25%	168,750		
Letting agents fee	10,000		
TOTAL COST			£982,000
Gross Site Value (Market Price - Cost)			£412,000
Market Price deferred 18 mth.@12%			£347,592

Site Value % = 347,592 / 1,394,000 = 25%

This type of analysis is widely used in the property market to assess either the profitability of a development or, as in the case above, to assess the land value based on a required level of profit. It is known that this is analytically simple and that for more complicated appraisals, especially those taking a number of years, a cash flow approach using discounted cash flows is more appropriate.

13.11 Applying the Property Investment Design Appraisal Model.

What the above appraisal provides is a starting point to understand the relationship between total asset value, total construction cost and land value. In this appraisal the value attributable to the land is 25% and the value attributable to the building is 75%. These ratios are important when applying the PIDAM. The two cases in Birmingham and London illustrated the way that different land value percentages are applicable in different locations. The objective is to demonstrate how different design for two buildings in a similar location can influence the total asset value.

As previously explained the Property Investment Design Appraisal Model - PIDAM - is made up of three elements:

$$\text{short term} = \frac{r}{d} - \frac{r}{d(1+d)^{n}}$$

$$\text{medium term} = \frac{R(1+g)^{n}}{y(1+d)^{n}} - \frac{R(1+g)^{n1}}{y(1+d)^{n1}}$$

$$\text{long term} = \frac{Rl(1+gl)^{n1}}{yl(1+d)^{n1}} + \frac{Rb}{(1+d)^{n1}} \cdot \frac{1 - \frac{1}{(1+d)^{N}}}{d}$$

Applying this to the two buildings as at 1983 in Kingston, Millenium House and Catherine House, the following data is used. The value of N (the years over which the building is amortised) is explained in Section 13.8.

Millenium House	Catherine House	Notes
r = 0	r = 130,000	Rent passing
d = 12%	d = 12%	Discount rate
n = 2 (years 'til let)	n = 4 (years to review)	
short term = 0	short term = 394,855	
R = 60,000	R = 130,000	Est. Rental Value
y = 12%	y = 12%	Cap. Rate
n1= 7 (2 + 5 years)	n1= 9 (4 + 5 years)	
g = 10% p.a. growth	g = 10% p.a.	Forecast R
medium term = 163,800	medium term = 230,806	
Rl= 25,000	Rl= 25,000	Ground rent
gl= 10% p.a.	gl= 10% p.a.	Growth land val.
yl= 7%	yl= 7%	Yield land val.
Rb= 35,000	Rb= 115,000	Rent on building
N = 10 years	N = 20 years	Mortgage repaymt.
long term = 403,821	long term = 613,436	
Asset value = 567,621	Asset value=1,239,097	PIDAM total

13.12 PIDAM Analysis Reviewed.

The above clearly demonstrates the influence of design on asset value. As previously explained the PIDAM has taken into account the short and medium term fluctuations in the cyclical property market and has also taken into account the land value which may be applicable in any one particular location.

The influence of design on the total asset value has been taken into account in a number of different ways. These can be illustrated by reference to the above.

In the case of Millenium House r = 0 due to the fact that it is not let. The findings of this thesis do not influence this part of the appraisal; existing valuation methodology takes this into account. The result when applied to the PIDAM is that in the short term Millenium House has no value yet Catherine House has a value of 394,855.

As Millenium House was available to let at £6 per sq.ft. R = £60,000 yet Catherine House was let at £13 per sq.ft. R = £130,000. The poor level of design as explained in Chapter 10 contributed to this difference. The result when applied to the PIDAM is that the medium term value for Millenium House is £163,800 yet the medium term value of Catherine House is £230,806.

13.13 The Design Influences.

The significant influence on the long term value of the asset are demonstrated by the PIDAM. Whilst Rl, gl and yl are identical in both cases, both Rb (the rent attributable to the building) and N (the number of years over which the building fabric is amortised) are very different.

In the case of Millenium House, Rb is only £35,000 which is the total rent 60,000 less the rent of the land £25,000. In the case of Catherine House, Rb is £115,000 which is the total rent of £130,000 less the rent for the land of £25,000.

Understanding the value of Rb is an essential prerequisite to applying the PIDAM. In this case the rents being quote in the market, guide the analyst. In other cases, for instance when two buildings are complete yet no market rental evidence is available, it may be necessary to arrive at a rent for the building by decapitalising the likely building cost (as illustrated in the Residual Valuation earlier in this chapter) and then making an adjustment, upwards or downwards, according to an assessment using the methodology set out in Table 10.12.

At times of recession in the office market it is likely that quoted market rents will be insufficient to cover the implied building cost suggesting a negative land value. This is frequently the case in locations where public finance is needed as an inducement to new commercial development.

Having established the rent which relates to the building (rather than the land) it is then necessary to decide upon an amortisation period so that the PIDAM can be applied. Once again the assessment set out in Table 10.12 is needed in this respect. In the two calculations set out above, the amortisation period for the poorly designed Millenium House has been taken as 10 years whilst for the better designed Catherine House 20 years has been used using the analysis set out in Section 13.8 above.

The results show that the long term value element of Millenium House is 403,821 yet the long term value of Catherine House is 613,436 - a difference of approximately 33% which can be directly attributed to the difference in the design of the two buildings.

It is therefore not surprising that the total asset value of the two buildings is very different; the value of Millenium House is 567,621 whilst the value of Catherine House is 1,239,097.

13.14 Summary.

Applying the Property Investment Design Appraisal Model to these two buildings has shown how the influence of the short to medium term fluctuations of the market, the underlying land value AND the quality of design can be taken into account in investment appraisal.

The PIDAM provides a flexible approach to explicitly rationalising the elements of an office investment which contribute to its asset value. Whilst the PIDAM initially offers a way to assess an investment's asset worth by comparing the result with conventional valuation figures, ultimately it provides a framework for a more accurate method by which the market could value office property investment assets.

Chapter 14

THE CONCLUSIONS

Chapter 14

THE CONCLUSION

14.0 The UK property investment market is still relatively immature in that, until comparatively recently property was largely owner occupied and regarded not as an asset with an investment value, but as a factor of production.

For this reason the level of analytical material available to assist investors is relatively small. It is only in the last two decades that firms of surveyors have collected data to provide a better understanding of property as an investment medium. Compared with the stock market, where daily information has been available since the last century, this is a relatively short time.

The dearth of analytical material is perhaps surprising considering the size of many investment decisions in recent years. It is common to see investment transactions of £50 million or more taking place with some of the larger development-investment expenditure exceeding £2 billion.

The lack of sophistication tends to be more noticeable when there is a down turn in the market when high interest rates and less demand from tenants cause buildings to remain un let for longer than developers expect. In 1973/4 the 'property crash' illustrated the problem vividly (McIntosh & Sykes 1985). Although the market appears to be more mature today even in 1990 companies such as Rosehaugh and London & Edinburgh Trust have found them selves in financial difficulty. The lack of liquidity of such companies makes such merchant trading/development companies vulnerable.

The property investment companies and the investing institutions also show their lack of analytical appreciation of the market. Not only when it slows down but also when it speeds up, such investors rarely seem to appreciate what is happening.

The starting point for this thesis was the recession of the early 1980s when a large number of office buildings remained un let from 1981/2 through to after 1985/6. Longterm investors seemed to have a poor appreciation of what was happening in the property market both in terms of the economic forces and the influence design was having on the value of their investments. Although there has been an academic debate about property valuation methods since the mid 1970s, analytical techniques, especially in relation to the cyclical nature of the market and design have remained unchanged in practise.

The concept of 'property' is related to a legal ownership in land on which there may or may not be a building.

A major criticism which could be levelled at the market is that, although property investment is said to be related to 'location, location and location' there appears to be almost no attempt to understand the difference between the value of the land(location) and the building(design).

In recent decades when office buildings have become more an asset rather than a factor of production, there has been a growing need to understand the needs of the consumer of that product. Compared with other industries, such as the car industry, the fast moving consumers goods industry or even the financial service sector, the level of consumer research has been extremely thin. Whilst the Consumer Association has undertaken numerous studies, until 1985 there had been no known attempt to find out the needs of office consumers. The National Office Survey undertaken in connection with this thesis was the first attempt to fill this gap.

The results of the National Office Survey in 1985 and the later National Office Design Survey in 1986 clearly revealed that those who design and build office buildings are not providing consumers with the sort of building that they require. Apart from car parking there is generally no overall dissatisfaction, different sectors of the market display different levels of satisfaction. There is also a relationship between age and poor design with older buildings having a less satisfactory level design on average. By examining three buildings in relation to the research results it has been possible to identify how poor design can influence value.

From this examination of certain buildings it has been possible to put together a framework which quantifies the influence of design on value. Table 10.12 is a starting point but, despite its fairly rudimentary nature, it has been possible to see how the influence of design can be incorporated into the Property Investment Design Appraisal Model.

The PIDAM has demonstrated how conventional valuation methods, the Rational Model and the Equity/Debt Model can be adapted to create a comprehensive method of appraisal by which the cyclical nature of the market, the value of the land AND the influence of the building design can all be taken into account. Applying the PIDAM in two different locations, London and Birmingham, and for two different buildings in a similar location, Millenium House and Catherine House, Kingston, has demonstrated the part that the value of the building and its design has on the total asset value. From this analysis it is clear that the LOWER the land value in relation to the total asset value, the GREATER the influence design can have on the value of the asset. But clearly further research is needed.

The problem with analysis in the property market continues to be one of the lack of reliable data. It is very likely that the relationship between building age and rental value as discussed in Chapter 9 varies at different stages of the property market cycle. Ideally one should obtain far more data for office buildings for a given location, both in terms of rental values and in terms of opinion data in relation to building design.

This thesis has concentrated on the market value of standing office investments rather than costs of development. Clearly the next stage is to relate the cost of developing different areas of design to their eventual value. However extra cost does not necessarily create better value. Better internal environmental control may be achieved by better design not by extra expenditure, although there may be occasions when greater expenditure on increasing the mass of a building will reduce the need for winter heating and reduce summer solar gain, both of which can result in energy cost savings over the life of the building.

Although such analysis is increasingly being deployed, especially in the out-of-town office market, it has to be noted that the savings are relatively minor in relation to the value of buildings in areas where land values are particularly high. Only changes to building regulations or other such legally enforceable statutes are likely to result in such design changes.

For property investors the concept of the investment worth in terms of value will continue to be more important than the cost-in-use of buildings, particularly where land values are high. Only greater time, money and resources devoted to an on-going study of the office investment market in good times and bad is likely to improve our understanding of the influence of design on office investment.

The research undertaken for this thesis has provided a framework for gaining a better understanding of the implications of design on the financial appraisal of office investments. The Property Investment Design Appraisal Model put forward in this thesis initially provides an explicit methodology for appraising the INVESTMENT WORTH of such investments in relation to their present market price. Ultimately it could be used as a model for assessing the MARKET VALUE of such property assets.

14.1.0 Further Research

14.1.1 Questionnaire Design and Appraisal Model

This thesis has provided a framework for future research into the Financial Implications of Building Design. One area which needs clarification is the office market's perception of design and how that could influence the appraisal model.

At different stages of the property market cycle, different results are likely to be obtained. There is therefore the need for an on-going survey, perhaps annually, to understand how perceptions of good and bad design change over time. Such an exercise would also identify, over the medium to long term, how consumer needs, coupled with technological change, influence office tenants. The growth of micro-computers over the last decade has changed office use significantly and the growth of satellite communications in the next decade could further influence change.

One of the aims of such an ongoing questionnaire, perhaps using a telephone rather than face-to-face questionnaires, should be to establish a stronger link between office design and appraisals. On the one hand, all buildings and design areas within buildings have a life cycle related to their cost-in-use and physical depreciation but they also have a life cycle in terms of their value-in-use. Obsolescence, due to technological change or the expectation of a more affluent work force need to be monitored. For instance, coal fired heating has been replaced by central heating, normally gas fired or oil fired, over the last thirty years. In some cases, such heating has been superseded by air conditioning. There is now growing concern about the cost of such air conditioning systems and the potential health risks. The National Office Survey clearly identified internal environmental control as an area regarded as needing most attention if tenants are to be more than just satisfied with the buildings they occupy.

One way forward for further research is to use a sample of good and bad buildings and then ask at least thirty office occupiers to identify those areas of good and bad design. They should also be asked to suggest the appropriate life cycle of different design areas of the building and the life cycle of the overall structure. This data could then be used when applying the Property Investment Design Appraisal Model.

14.1.2 Testing the Property Investment Design Appraisal Model

When applying the Property Investment Design Appraisal Model, a group of property investment valuers should be involved, perhaps applying the Delphic Method.

The Delphic Method essentially comprises a structured approach to exploiting the specialised knowledge and judgement of experts in a particular field. In a commercial environment, it is difficult to define "an expert". Eventually, a panel of competent valuers, each acting in isolation of each other can arrive at the most likely value. The weakness, of course, of the Delphic Method is its reliance upon subjective judgement, but if the experiment is carefully controlled, this can become a virtue.

Different applications of the Property Investment Design Appraisal Model relating to a number of buildings need to apply different weighting to the various design areas as set out in Table 10.12, perhaps having knowledge of the results of further work as suggested and as set out in section 14.1.1 above. Clearly, it is not only the framework of the Property Investment Design Appraisal Model which is important but the assumptions used when applying the model to a particular office investment.

14.1.3 The Appraisal Model over time

The Appraisal Model put forward in this thesis clearly needs to be tested in the market place. Historically, it is not possible to sensibly test the model based as at 1980 to see whether it accurately forecasts performance of office investments over the last ten years. In the last decade, the level of knowledge available to property investors has improved significantly, especially forecasting skills and knowledge of land values. This was not available ten years ago.

A way forward is therefore to consider starting applying the model to a series of office investments and regularly monitor the actual performance against the value generated by the appraisal model. Such testing needs to take place over at least ten years so that the short and medium effects of the model are covered, when the opportunity costs of money as well as the short to medium term rental forecasts are very significant. It is only over the long term that the cash flow moves into a stage whether the model differentiates between the land value held in perpetuity and the building which is authorised according to the design of the structure.

14.1.4 The Database

As discussed throughout this thesis, the problem for property investors, but also the potential benefit, is the lack of market data. It is a problem because largely intuitive decisions are often made, simply because there is no structured hard data available to clarify such decisions. The advantage is that, if by chance the investor makes a correct, largely intuitive decision, the investment may perform very impressively, especially if the timing in relation to the property market investment cycle is correct.

For the concepts put forward in this thesis, especially the Property Investment Design Appraisal Model to be taken forward, several areas of data need to be improved.

One area is the relationship between age and rental values. More data from a very wide sample of office buildings is needed and measurement undertaken as set out in Sections 9.6 and 9.7 of this thesis. Such data needs to be collected at different stages in the property market cycle because it is quite likely that the relationship between rental value and building age varies at different points in the cycle. The data also needs to be dis-aggregated into data for well designed buildings and data for poorly designed buildings to clarify how design influences rental value over time.

A further area where data is generally lacking relates to land value. Not only should there be more regular monitoring of office land values, but this should be used in conjunction with the residual land value method of appraisal as set out in Chapter 12 of this thesis. If such an on-going database became available, it would be much easier to apply the Property Investment Design Appraisal Model and it would give the investment appraiser greater confidence in the viability of the results.

APPENDIX A

HEALEY & BAKER RESEARCH

NATIONAL OFFICE SURVEY

1985

Name of Interviewer:

Name of Academic Institution:

Date of Interview:

PART ONE - GENERAL INFORMATION

(To be completed by the interviewer where possible prior to interview).

1.1. (a) Name of occupying tenant:

(b) Address of tenanted property:

(c) Contact/Interviewee:

(d) Position in Company:

(e) Telephone number:

(f) Address to which report is to be sent if different from (b) above:

1.2 Nature of tenant's business:

Computers/Electronics

Professional Services

Financial Services

Manufacturing

Other (please specify)

1.3 Nature of premises:

Headquarters building

Backroom/administrative office

Branch/regional office

1.3 Transport:

(a) Bus service within 10 minutes' walk? YES/NO

(b) Rail/Tube station within 10 minutes' walk? YES/NO

(c) International Airport within 30 minutes' drive? YES/NO

(d) Motorway (or equivalent) junction within 10 minutes' drive? YES/NO

(e) Other transport facilities? (please specify)

1.4 Nearby Facilities:

(a) Parks/recreation/sport? YES/NO

(b) Major shopping street? YES/NO

(c) Other facilities? (please specify)

1.5 Is the building located in a traditional Central Business District? YES/NO

1.6 Approximate date of construction of building or of major refurbishment. [ ]

1.7 Does the tenant have his own front door? YES/NO

1.8 Is the building single or multi-let? SL/ML

PART TWO - LOCATION

2.1 (a) What was the previous address of your premises?

(b) How far is this from your new premises? [ ] miles

2.2 For which of the following reasons did your organization need to leave it's previous premises?

- Expansion [ ]
- Contraction [ ]
- Changing nature of business [ ]
- Diversification [ ]
- Rationalisation [ ]
- Merger [ ]
- Cost of accommodation [ ]
- Lease expiry [ ]
- Rent review [ ]
- Building obsolescence [ ]
- Changing office technology [ ]
- Staff requirement [ ]
- Image of organisation [ ]
- Working environment [ ]
- Car parking [ ]
- Shopping facilities [ ]
- Others (please specify) [ ]

2.3 Are you new to the U.K? YES/NO

2.4 For which of the following reasons did your organisation chose this location?

- Proximity to market ☐
- Proximity to suppliers ☐
- Proximity to competitors ☐
- Proximity to supportive services ☐
- Minimisation/lessening of rents and costs ☐
- Leisure/recreation/environment ☐
- Good housing stock ☐
- Availability of required staff ☐
- Image/prestige of address ☐
- Road/rail/air communications ☐
- Electronic communications ☐
- Other reasons (please specify) ☐

2.5 Where did the idea of moving offices or taking new accommodation start?

- Director/Board level ☐
- Premises Manager ☐
- Regional/Area Manager ☐
- Staff recommendation ☐
- Union pressure ☐
- Other (please specify) ☐

2.6. (a) Who makes the major decisions regarding property matters (excluding day-to-day management)?

- Managing Director ☐
- Finance Director ☐
- Other Director ☐
- Property Manager ☐
- Other (please specify) ☐

(b) If day-to-day property matters are handled by another person please specify.

PART THREE - BUILDING DESIGN

3.1 When deciding to rent this particular accommodation, which were the most and least important **design** considerations? (Rank 1-4)

Structure/Shape/Flexibility	☐
Car Parking	☐
External Appearance/Visual Image	☐
Internal Services/Amenities	☐

3.2 Structure/Shape/Flexibility

(a) Is the floor loading adequate for your purposes? YES/NO

If known, give floor loading [lbs per square ft]

(b) Are the supporting columns located to enable the ideal flexibility for your organization's needs? YES/NO

(c) If known, state how many square feet per structural column [sq ft]

(d) Estimate the percentage of the net lettable area which may be classed net usable area (excluding access, etc) [%]

(e) For your purposes what is the ideal wall-to-wall width of an office floor [ft]

(f) Describe/sketch the shape of a typical floor and give approximate dimensions.

(g) For your purposes is the shape of the floors

GOOD/SATISFACTORY/POOR?

(h) Do your premises have room for expansion? YES/NO

If yes please comment

(i) How could or should the shape/structure have been improved?

COMMENTS

3.3 Car Parking

(a) How many dedicated parking spaces are there?

(i) Adjacent surface parking space	
(ii) Other surface parking spaces	
(iii) Multistorey parking spaces	
(iv) Other parking spaces (please specify)	

Total dedicated parking spaces	

(b) Approximately how many employees work on the premises?

(c) Interviewer to complete

What is the ratio of car spaces per employee?	1:
What is the ratio of car spaces per square foot?	1:

(d) Does any of the parking involve any additional payment? YES/NO

If yes, please comment

(d) Do you consider the external appearance/visual image of your building to be

GOOD/SATISFACTORY/POOR?

(e) How could or should the external appearance/visual image have been improved?

COMMENTS

3.5 Internal Services/Amenities

(a) From a functional point of view as a tenant in occupation comment on the following:

INTERNAL ENTRANCE HALL	GOOD/SATISFACTORY/POOR
LIFT CAPACITY	GOOD/SATISFACTORY/POOR
LIFT PERFORMANCE	GOOD/SATISFACTORY/POOR
ARTIFICAL LIGHTING	GOOD/SATISFACTORY/POOR
NATURAL DAYLIGHT	GOOD/SATISFACTORY/POOR
HEATING	GOOD/SATISFACTORY/POOR
INTERNAL ENVIRONMENT CONTROL	GOOD/SATISFACTORY/POOR
CARPET/FLOORING	GOOD/SATISFACTORY/POOR
PROVISION FOR CABLE TRUNKING	GOOD/SATISFACTORY/POOR
CEILING DESIGN	GOOD/SATISFACTORY/POOR
TOILETS	GOOD/SATISFACTORY/POOR
KITCHEN/CATERING FACILITIES	GOOD/SATISFACTORY/POOR
DIRECTION SIGNS WITHIN BUILDING	GOOD/SATISFACTORY/POOR

Comments if appropriate

(b) Do fire escape provisions conflict with your requirements for the functional use of the building? YES/NO

(c) Do you consider that the security aspects of the building are adequately incorporated into the design? YES/NO

(d) (i) Do your premises have air conditioning? YES/NO

(ii) Do you consider air conditioning to be an important criteria in deciding which premises to occupy? YES/NO

(e) (i) Do your premises have any raised floors? YES/NO

(ii) Do you consider the provision of raised floors to be an important criteria in deciding which premises to occupy? YES/NO

(f) Are the internal services/amenities overall

GOOD/SATISFACTORY/POOR?

(g) How could or should the internal services/ amenities have been improved?

COMMENTS

PART FOUR - RENTAL PAYMENT/LEASE TERMS

4.1	Rent per annum	£ pa
4.2	Net lettable area	sq ft
4.3	Rent per square foot	£ sq ft
4.4(a)	Lease type	FRI/OTHER
(b)	If other please comment	
4.5	Lease start date	
4.6	Lease term	Years
4.7	Rent review pattern	
4.8(a)	Break Clause	YES/NO
(b)	If yes give details	
4.9(a)	Is there a service charge?	YES/NO
(b)	What is the cost of management/ maintenance and repair per sq ft	£ sq ft
4.10	What are the total rates payable pa	£ pa
4.11	What are the rates payable per sq ft?	£ sq ft
4.12	What is the annual cost of property insurance per sq ft	£ sq ft
4.13	<u>Interviewer to complete</u>	
	Approximate total cost per sq ft (4.3 + 4.9 + 4.11 + 4.12)	£ sq ft

4.14 Estimate the proportion of your company's annual turnover which is spent on property | %

4.15 Which aspects of the building **design** most influenced your taking a lease of the premises?
Please explain

4.16 Which aspects of building **design** are most likely to reduce the increase in rent at the next rent review?
Please explain

4.17 Would you have been willing to pay more for a building which met your requirements precisely? YES/NO
If so which factors are important?

4.18 Are maintenance/running costs higher than expected? YES/NO

4.19 Did the level of rates influence your organization's decision to rent these premises? YES/NO

COMMENTS

PART FIVE - PLANNING THE MOVE

5.1 When deciding to rent accommodation which were overall the most and least important considerations? (Rank 1-5)

Location with Great Britain	
Location within a town	
Design of the building	
Cost of rent/maintenance/rates	
Lease terms	

5.2 When taking your new premises which of the following professional services did you use?

Commercial Estate Agents	
Architects	
Building Surveyor	
Quantity Surveyor	
Land Economist	
Town Planner	
Electrical/Mechanical (Services) Engineer	
Space Planning Consultants	
Accountants/Financial Advisor	
Solicitor	
Other (please specify)	

5.3 On which of the following aspects of the move did you employ commercial estate agents?

(a) To provide advice on location YES/NO

(b) To identify the appropriate building YES/NO

(c) To provide advice as to rent/lease terms etc YES/NO

Which, if any, of these three services were not adequately provided by commercial estate agents ?

5.4 If not through an employed agent, how did you find out about these particular premises?

National Press	
Property Journal	
Television	
Radio	
Enquiry to Agents	
Video Tape	
Board on Building	
Leaflet received in post	
Other (please specify)	

5.5 Did you think that the information provided by the marketing agents of the buildings you considered was

GOOD/SATISFACTORY/POOR?

5.6 Which information which was not readily available from commercial estate agents did your organization have to research itself?

5.7 (a) In this particular location were there a number of alternative buildings of similar size available? YES/NO

(b) If there were several available which particular aspects made you choose this building?

5.8 Did your organization arrange for works to be undertaken to adapt the building to your needs (eg partitioning, etc)? YES/NO

5.9 (a) Did you receive any consultancy assistance in planning the internal layout of the office? YES/NO

(b) If yes give details, (including nature of profession) from which assistance sought.

5.10 Would the services of a project manager have been useful:

(a) In space planning? YES/NO

(b) In fitting out the interior works? YES/NO

5.11 (a) Which finishes and fittings were subtantially modified by you as an occupying tenant?

(b) Would you have preferred a shell/core building to fit out yourselves (i.e. carpet/partitioning/ ceiling, etc)? YES/NO

5.12 Did you experience any unforseen problems in the move with regard to:

(a) Time/timing YES/NO

(b) Cost YES/NO

(c) Complexity YES/NO

(d) Staff Difficulties YES/NO

COMMENTS

5.13 Is your organization completely happy with the space it now occupies? YES/NO

If not, comment

5.14 Would you approach any future moves in a different way? YES/NO

If so, comment on any changes.

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DESIGN APPENDIX B

NATIONAL OFFICE DESIGN SURVEY. 1986

Follow up Questionnaire.

Would you like to receive an exclusive report based upon the results of this survey YES/NO

Name: Address:

Approximate Net lettable area:

0-5000 sq.ft	5-20,000 sq.ft.	20,000 sq.ft.plus.

IF more resources were available to be spent on the construction of your building, which of the following would have merited more expenditure?

Please Rank in Order of Importance : (1 = most important, 10 = least important)

1. Lift Performance/Reliability
2. Internal Environmental Control (i.e. Air conditioning, Solar Protection, Ventilation)
3. Heating System
4. Provision for Cable Trunking (i.e. Raised Floor/Ducting)
5. Arrangement for kitchen/catering facilities
6. Improved car parking
7. External appearance of building
8. Quality of Internal Finishes
9. Toilet Facilities
10. Security
11. Entrance Hall

Where do you think there has been un-necessary expenditure? (Your may give more than one number)

Which of the above, in your view has most effect on the rental value? (You may give more than one number)

Would your company be prepared to pay a higher rent for a building with a raised floor? YES/NO

Approximate Rental Value of your Building, per sq.ft. per annum.

0-£10	£10-£15	£15-£20	£20+

Would your company have been prepared to pay a higher rent for a better overall designed building? YES/NO

Would your company have been prepared to pay a higher maintenance/management bill for a better designed building? YES/NO

Would the quality of the building management influence your choice of an office building in the future? YES/NO

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